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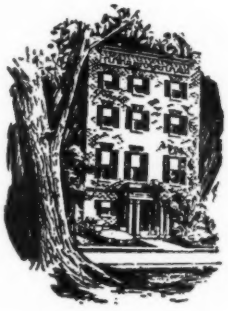

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The American Forestry Association, publishers of *American Forests*, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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Licensing Foresters

Cover . . . . . .

This month's cover portrays one of the many spots along the shore of the Great Lakes which beckon to tourists every summer. Captured by the camera of M. J. Humphrey on the North Shore Drive of Lake Superior, this scenic presentation seems to offer respite to those seeking freedom from the harassments of daily routine —truly a mecca for summer vacationists. We are fortunate in having such healthy bodies of water where the problem of pollution is not prevalent, as it is in Wisconsin's inland lakes, discussed by Clay Schoenfeld in this month's Team Play Can Lick Pollution *(page 6).*

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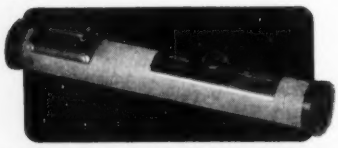

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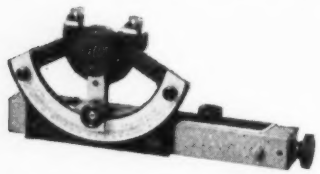

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American FORESTS Forum

In This Issue—Residents of the Midwest, particularly, will need no prompting to cite their own pet parallel to the dead algae-caused stench which, as **Clay Schoenfeld** tells us in *Teamplay Can Lick Pollution* (page 6), permeated Wisconsin's Lake Waubesa in 1948. They will be immeasurably encouraged, however, to read how University of Wisconsin scientists, technicians and specialists have banded together to make great strides toward licking a smelly problem. Dwellers along inland lakes from the Dakotas to New England will be keeping a close eye on the activities and success of the Badger University researchers and undoubtedly will swamp them with requests to share their know-how. The author, a writer and lecturer at the University of Wisconsin, is currently putting the finishing touches on a book dealing with wildlife management, tentatively titled *Operation Outdoors.*

Let's Go to Alaska is likely to paraphrase the reader's sentiments exactly after he has read **Jay Ellis Ransom's** fine article by the same name beginning on page 10. The author, who hails from Hermosa Beach, California, spent considerable time in our territory to the north.

Just as many a husband has been moved to unkind thoughts about beaver upon receiving a staggering "please remit" from his spouse's furrier, so have railroad men, highway maintenance men and farmers, as **Earle Doucette** tells us in *Beaver Boom* (page 14). The author deals largely with the furry animal's dam-building habits, and he also dwells at length on the economic value of the creatures and the amazing increase in their population numbers in Maine. It's a mighty interesting subject, the way Author Doucette, well-known Maine outdoor writer, tells it.

The picture isn't quite so rosy when it comes to that fighting game fish, the Montana grayling. **Dale White** tells us *We're Gambling with Our Grayling* (page 22), all because of too little concern too late. The Montana Fish and Game Commission and the U. S. Fish and Wildlife Service are hard at work now, however, trying to save this tasty fish from extinction, a problem brought on because of an insufficient food supply for grayling fry. The author has had many articles published on Montana subjects, including a smokejumper piece in *Colliers.*

There would be no mourning, however, among foresters if they could be assured of the extinction of *Dendroctonus Engelmanni*, the bark beetle which has killed more than four billion board feet of Engelmann spruce in the Colorado Rockies in the past decade. **Leland J. Prater,** U. S. Forest Service photographer, records an epic chapter in the *Battle of the Beetles* (page 18) as it took place a year ago. If Congress does its duty in allocating the necessary funds, the battle will continue this summer—otherwise the pesky beetle will kill timber worth manyfold the cost of control measures.

On the lighter side, you may get some useful vacation tips from **Paul F. Runge** in his *Family Camping is Fun* (page 27). The author, deputy regional executive of the Boy Scouts of America at Atlanta, Georgia, tells us how inexpensively and how thoroughly he and his family enjoyed a 16-day trip last summer through 17 states and part of Canada.

There's also another of **James Stevens'** Davy Crockett legends (page 17), this one on the "Yaller Blossom of the Forest's" encounter with the *Mammoth Buff.* The author is the same one you probably read about recently as having exposed the Russians' dastardly plot to claiming Paul Bunyan's heritage as their own. There's also Part III of the Association's *Report on American Big Trees* (page 26) and an announcement of the AFA's 76th annual meeting (page 30) scheduled for Jefferson, New Hampshire October 8, 9 and 10. For up-to-the-minute news on legislative activities, there's **G. H. Collingwood's** *Washington Lookout.*

The editorial page (48) features the thoughts expressed by **Dr. Kenneth E. Oberholtzer** on *Education for Freedom First* in a May speech before the U. S. Chamber of Commerce annual meeting in Washington, D. C. Dr. Oberholtzer is superintendent of Denver, Colo. public schools, and president of the American Association of School Adminstrators.

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WASHINGTON LOOKOUT

By G. H. COLLINGWOOD

Funds allotted for control of forest pests are likely to be heavily slashed in the Agriculture Appropriation Bill, H.R. 3973, as reported to the House of Representatives on May 4. The $5,000,000 recommended for suppression and eradication of forest insect pests and tree diseases, and for surveys to serve as the basis for protective measures is $4,150,000 below budget estimates submitted for the fiscal year beginning next July. The $3,300,000 for white pine blister rust control is $107,000 less than requested. This is insignificant in comparison with $4,043,000 by which the program of the Forest Pest Control Act is reduced. This leaves $1,700,000 to be parceled out as follows: $700,000 to complete the spruce budworm project in Oregon, $500,000 for surveys and control on various pests, and $500,000 for contingencies and emergencies. Some of the survey money will permit continuation of studies to learn how far oak wilt has spread and how the disease jumps 50 miles or more to an isolated oak growth.

The committee recommended continuation of the spruce budworm project in Oregon. This decision was based on "the high timber values involved and the good prospects for successful completion at a reasonable cost."

Forest Service reductions total $8,827,475 to bring the recommended appropriation to $61,634,525. In justifving the cuts the committee reported:

"The funds provided should permit the Forest Service to continue its activities at the 1951 level of operation. A reduction comparable to that for most other items of the Agriculture Department has not been made here in view of the need to provide for increased timber sales resulting from increased requirements of the defense effort. Since 1950, demand for national forest stumpage has been increasing. Timber sales, which in the fiscal year 1950 amounted to 30.7 million dollars, are expected to increase to $40,000,000 in 1951 and around $50,000,000 in 1952."

The importance of our timber resources to the National Defense Program was cited as justification for recommending $5,220,500 for forest research. This is within $124,500 of the budget estimate. Gratifying interest in research and a proposal for participation by the states in the field research facilities is indicated in the report on the bill:

"Recognizing the need to expand the number of research units throughout the country despite the impossibility of providing additional funds, the committee has recommended for the past several years that the Forest Service develop a plan for operating the field research program on a cooperative basis, calling upon each state to provide funds to match those included in federal appropriations. The committee feels this year that it is increasingly necessary that such a plan be developed, in view of the urgent need for additional funds for this purpose. Accordingly, it has made provisions in the bill for the utilization of contributions from local sources to expand the number of facilities throughout the country and has recommended sufficient funds for 1952 to permit the continuation of those stations now in existence. Such a plan should enable the Forest Service to provide for the research unit in New Mexico authorized last year and to make provision for a research unit in the sandland areas of the Southeastern United States. . . ."

And here is what promises to be the clincher, which if fulfilled, will deserve wide publicity and careful reading:

"The Department is urged to begin immediately developing a research program along the lines outlined above, and is requested to submit a special report by next January 1 to the committee concerning conditions prevailing in each state, action necessary to obtain contributions from state and local sources, and legislation recommended to put this plan into effect."

Forest roads were hit hard in an effort to effect economies. A proposed increase of $6,000,000 was disallowed from the Forest Service items, leaving $11,500,000 with which to continue the 1951 program. The committee made the cut "in the belief that timber operators should provide the means of getting timber out in connection with their logging operations. Since states receive 25 percent of timber receipts, federal construction of roads which could be provided by timber operators not only increases federal expenditures but also increases payments to states beyond the intent of the law."

Earlier a mere half of the $5,000,000 requested was approved for forest development roads and trails in the Third Supplemental Appropriation Act, 1951. The report said: "The committee has felt for some time that most of the forest roads and trails should be constructed by private operators in connection with their logging operations in the national forests. Testimony from several experts outside the Department confirm the committee's opinion on this matter."

Access roads were denied to timber in the 2,500,000 acres of checkerboarded sections of the revested Oregon and California grant lands. The budget estimate of $1,000,000 to the Bureau of Land Management was cut out of the Interior Department Appropriation bill, H.R. 3790, when it passed the House on May 2. The report stated:

"The committee was willing to provide funds for the initiation of an access road program in prior years on the assumption that legislation relating to the distribution of receipts from the sale of timber would be modified. The existing law provides for an inordinate proportion of receipts from such timber sales to be distributed to counties of Oregon. The federal government cannot be expected to invest in capital improvements, even for such valuable natural resources, when the financial proceeds of harvesting these resources accrue in excessive proportion to a small number of counties rather than to the federal treasury. The committee will be unwilling to provide for capital expenditures of this nature unless and until substantial adjustments are made regarding the distribution of receipts of timber sales from the O and C and Coos Bay grant lands."

This reflects the recent completion of back payments and interest charges to the federal treasury. Under the law, the 18 affected counties will now receive 75 percent of all O and C timber sale receipts.

Spurred by the action of the Appropriation Committee in cutting out all of the $1,000,000 budgeted for access roads to the O and C timber, Senator Guy Cordon, of Oregon, introduced S. 1385 on April 25, to cut back the share of the counties in the timber receipts from the O and C lands to 50 percent of the gross receipts.

The Interior bill passed the House on May 2 and now awaits hearings before the Senate subcommittee on appropriations. Included in it are recommendations of $7,700,000 for the Bureau of Land Management, $28,294,500 for the National Park Service, and $12,548,000 for the Fish and Wildlife Service. The latter amount corresponds with the budget estimate but is $1,029,950 below the current year. Each of the other bureaus suffers cuts.

The Agriculture bill is scheduled for consideration in the House during the week of May 14. If the recommended cuts are sustained, some 2911 departmental positions may be

wiped out, including 380 in the Forest Service and 49 in the Soil Conservation Service.

Responding to a query concerning the possibility of constructing dams within the Dinosaur National Monument in northeastern Utah, Leo J. Diederich of the National Park Service offered this clarifying summary:

No bill for any dam or dams in the Dinosaur National Monument has been introduced in present session of Congress. On the basis of April, 1950 hearings held in Washington, D. C., Secretary Chapman authorized the Bureau of Reclamation to continue studies previously started within the area, and to complete a report. He emphasized that this action was not to be interpreted as an approval of the dams. He merely authorized completion of a study already in progress.

In January 1951, Secretary Chapman approved the Bureau of Reclamation report, then in accordance with law, circulated it to the States in the Colorado River basin, requesting their views be submitted to the Secretary of the Interior.

The report, with accompanying views of the several states is understood to be in preparation for transmission to Congress. It may be accompanied by the draft of a bill.

That this action by the Secretary may not be considered as a precedent which would threaten the integrity of areas within the National Park System, Order No. 2618, was issued on February 21, 1951, reaffirming long-established policies of the Department of the Interior and of Congress by assuring the conservation of national parks and monuments and their protection from adverse effects of power, reclamation or other water developments. It declares that:

"No bureau, service or agency in this Department shall henceforth undertake or continue, within or affecting any national park or monument, without the written consent of the Secretary of the Interior, any investigations or studies, or undertake any drilling, surveys, or other exploratory work incident to the preparation of reports or plans relating to water development, or obligate any federal funds therefore, except where the Congress has specifically authorized such a project in the reserved area concerned."

It appears this order is designed to avoid repetition of any similar situation wherein Reclamation, or any other bureau in Interior can start investigations having to do with development or use of a national park or monument, without approval of the Secretary.

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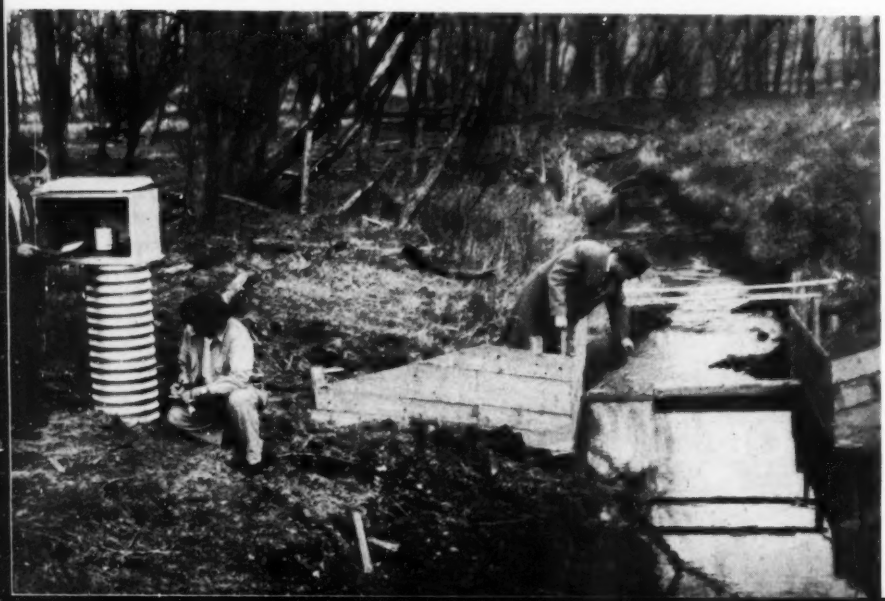
How Teamplay Can Lick Pollution

By CLAY SCHOENFELD

Out fishing for facts instead of fish are, left to right, U. of W. Meteorologists Reid Bryson, James Verber, and Verner Suomi

Scientists at Madison are among the first in history to measure how much fertilizer goes into lake and find where it comes from



THE cottagers on Lake Waubesa, Wisconsin, were up in arms.

"Our lake reeks!" they said. And it did—literally. Great masses of dead algae discolored the water and filled the air with a stench that made swimming and boating unbearable.

That was in the summer of 1948. The cottagers took their problems to scientists at the near-by University of Wisconsin.

"Can't you help us?" they pleaded.

Out of that challenge has grown at Madison a unique cross-campus lake investigations team that has already come up with some of the answers to the "smelly lake" problem and that holds real promise of making fundamental progress in the whole field of fresh-water pollution.

It was the University's president, E. B. Fred, himself a scientist of note, who recognized right off the bat that water pollution is not a problem which can be tackled by any one branch of research department, school, or college alone. He saw water pollution for what it is—a basic disease of nature which calls for an across-the-board attack.

"Everybody's going to be in the act," he said. He assigned chemists, geologists, foresters, soils men, engineers, game managers, meteorologists, bacteriologists botanists, zoologists, and physicists to his special research

"Blooming" algae makes boating and swimming almost unbearable on Lake Mendota

By pooling its knowledge, the University of Wisconsin is making significant progress in solving the problem of the "smelly" lake

committee. They came together from almost every school and college on his 500-acre campus.

Out of this pooling of knowledge and study in Wisconsin have come some of the year's longest strides in the science of land and water management.

Here is the record to date:

1) Two University of Wisconsin engineers have developed a pilot plant which shows indications of being able to take the phosphorus out of sewage effluent. Large-scale application of the discovery would mean that sewage effluent would no longer contaminate lakes and streams with surplus phosphorus, one of the elements held responsible for nuisance growths of algae. Furthermore, sewage phosphorus, which up to now has been a worthless article, could be refined and sold as commercial fertilizer.

2) The same two engineers have measured for the first time exactly how much "fertilizer" goes into a typical "civilized" lake, and where it comes from.

3) Three U. of W. meteorologists have evolved a revolutionary approach to the study of lake temperatures and lake current.

4) U. of W. botanists have succeeded in growing in the laboratory for the first time some of the species of blue-green algae responsible for nuisance growths, and in determining their exact nutritional requirements.

5) U. of W. zoologists have compiled significant amounts of hitherto unknown data on the ecology of algae "in the wild."

6) U. of W. soils men, for the first time in the history of farm research, are getting accurate records of both gross soil losses and "fertility" losses on a single field over several seasons of runoff. And they know now how to cut it down.

7) A U. of W. engineer is perfecting a weed-cutting and harvesting machine with which to rid shallow areas of lakes of surplus weed growths.

8) U. of W. biochemists have developed a process for converting paper mill wastes into useful industrial products.

All this because a Wisconsin lake smelled.

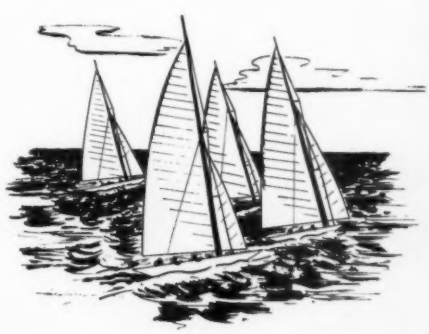
As Professor W. B. Sarles, leader of the U. of W. lake investigations team, puts it:

"The smelly-lake problem was our point of departure. We intend to lick it. Furthermore, given sufficient time and funds, we believe our coordinated work will continue to make significant contributions in the area of conservation and wise use of the country's water resources."

Resources which — he might have added—are of increasing importance to the U. S. economy in days of warm war.

The algae fifth column works like this: In fertile temperate waters, huge numbers of these tiny green plants are produced in the summertime. These algae have a very short life. When they die, they float to the top of the water. Wind and current action results in the accumulation of great masses of dead and dying algae along the shore and in the bays. As the layer of scum decays, there comes an inevitable smell. The bigger the bloom the worse the smell.

The smelly-scummy lake situation is no phenomenon local to Lake Waubesa, Wisconsin, by any means. The problem is widespread from the Dakotas eastward through Michigan and Pennsylvania to New York and New



England. As you fly in to Minneapolis, Minnesota, in the summer, for example, you can see a string of scum-covered lakes passing under your plane. As a matter of fact, biologists and engineers have been fighting algae blooms in Sweden, Germany, Switzerland, and Japan since long before the nuisance cropped up in the United States.

All except very large, deep lakes are subject to "infection." Even slow-moving, shallow rivers have been known to bloom excessively in their quiet oxbows. Only waters remote from civilization are immune. This is because algae blooms are a "man-made" problem. That is, they develop in bodies of water made "super-fertile" by excess nutrients contributed accidentally or on purpose from the surrounding watershed. Whether you have water near rich farmlands or near cities, in other words, there you're subject to smelly-scummy conditions.

Wisconsin's Professor Arthur D. Hasler states the case this way:

"From all evidence so far reviewed, where there is a heavy flow of surface drainage from agricultural lands or especially from urban sewage, there a youthful, clean body of water may change to an old, scummy body of water in the short period of a few decades."

Nuisance growths of weeds and algae discourage summer residents and recreation seekers. Bathing beaches are dirty green instead of clear and blue. Resort air reeks. General living conditions may also be affected, because the decaying algae masses furnish ideal homes for pathogenic organisms. Many people are literally allergic to algae. Property values near infected lakes tumble.

Here is the way Director Sarles described the situation facing his committee:

"Much of the early work on lakes and streams involved studies on natural waters that were undisturbed by civilization. During recent years the effects of civilization upon lakes and streams have become increasingly significant. Cultivation and fertilization of farm land results in greater opportunity for plant nutrients to wash or drain into bodies of water. Residential areas and industries produce wastes which, after treatment, are discharged into lakes and streams. As cities grow, and as increasing numbers of residences are built on the shores of lakes and streams, the problems of pollution become acute.

"Consequently, we are directing much of our work toward study of the effects of pollution, control of pollution, and management practices to correct effects of pollution."

It's true that smelly-scummy lakes can be brought under temporary control through the use of copper-sulphate spray. The poison is spread on the lake from a device much like a big lawn sprinkler. A copper-sulphate solution weak enough not to harm fish directly is still strong enough to kill algae, or at least to inhibit their growth. If this poison is sprayed on a lake at the right time—that is, before the bloom is at its peak—it will pretty effectively prevent offensive algae blooms.

But there is a strong suspicion on the part of Wisconsin biologists that continuous use of this persistent poison will upset the biotic balance of lake and stream water. So they're looking for a safer, sounder solution to pollution—through teamwork.

This is the first time in the history of conservation that all the laboratories and professors of a whole university have been tied together in a concentrated attack on the problems of lake and stream management. It's rather fitting that it should be the University of Wisconsin which has taken this pioneering step in conservation research. Historically, Wisconsin was one of the first universities in the country to engage in lakes-and-streams studies. A Wisconsin zoology professor by the name of Edward Asahel Birge began as early as 1875 to build up a reputation as the greatest limnologist this side of the Atlantic. He later became president of the university and stimulated continued expansion of aquatic research at Wisconsin.

Today, in the words of Dr. Sarles, "the potential ability to perform significant work on lakes and streams is greater at the University of Wisconsin than in any other institution in the United States.

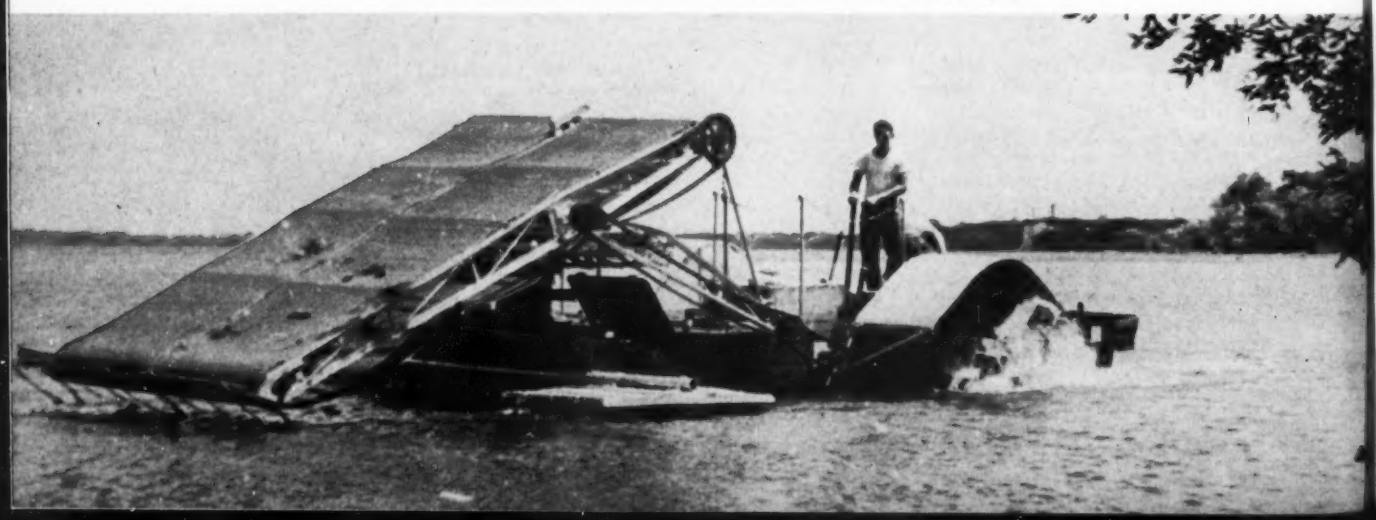
"The problem of pollution is a very complex one. We have only begun to scratch the surface. But what we have done so far, and our continued coordinated effort, should yield results of great value to the cause of conservation all over the country," he declares.

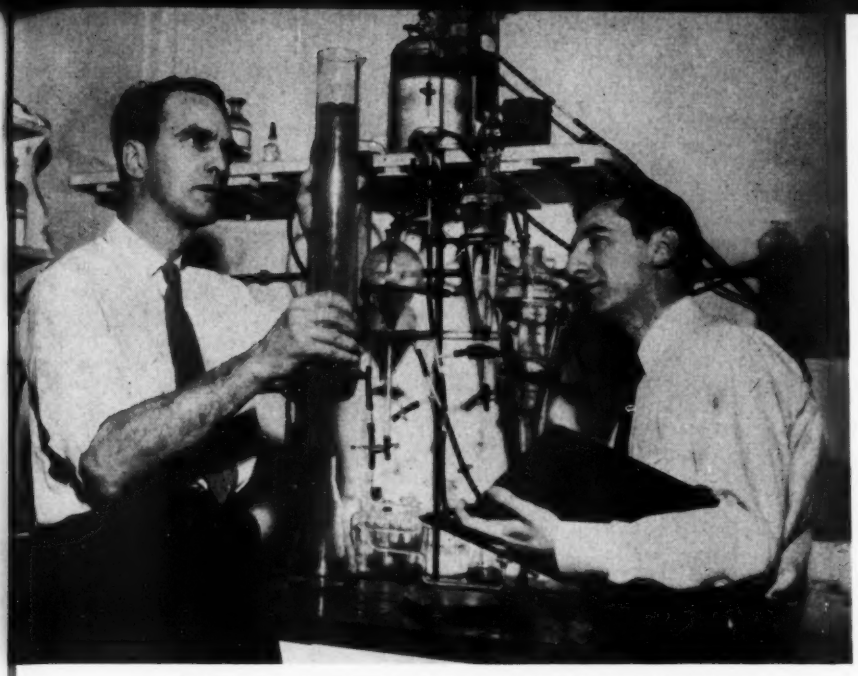
Already the word of how teamwork is fighting pollution at Wisconsin has spread around the country. In January, for example, a leading sanitation engineer from Connecticut came west to see for himself just what is going on, and how.

Let's make a quick run-down, in a little more detail, of what he found as to the way team play is on the road to licking pollution in Wisconsin:

Sewage treatment. Scientists all over the world have been trying to do for years what U. of W. Professors William L. Lea and Gerard A. Rohlich have finally accomplished. They have

This University of Wisconsin weed cutter and harvester not only slices off submerged weeds but also loads them onto waiting barge





Engineers William L. Lea, left, and Gerard A. Rohlich have developed plant for removing phosphorus from sewage effluent

been able to remove 99 percent of the phosphorus from sewage effluent. Ordinary sewage effluent contains about five parts per million of phosphorus. Doctors Lea and Rohlich have brought this level down to seven-100th parts per million. This level is actually below the amount of phosphorus contained in most natural creek water.

Lea and Rohlich estimate they can get about a ton of salable phosphorus fertilizer a day out of the 15 million gallons of sewage being processed daily at the Madison, Wisconsin, plant. The process also cuts down the organic nitrogen by 60 percent and the "biochemical oxygen demand" by 84 percent. These are two other factors which pollute lakes.

The Lea-Rohlich "flocculation process" of phosphorus removal involves the addition of about 200 parts per million of alum to a batch of sewage effluent. The alum and the effluent are mixed together for about 15 minutes. This mixing brings about the formation of a sludge which sinks to the bottom of the tank, carrying the phosphorus and the alum with it. The liquid effluent is then piped off into a stream. Most of the alum can be recovered and used over and over again.

Lake fertilization. How much weed-and-algae fertilizer goes into a "civilized" lake, and where does it come from? That was another problem tackled by busy researchers Lea and Rohlich. They found that even a lake into which no sewage effluent is being directly discharged gets a significant supply of fertilizer. Using Lake Mendota at Madison as a typical example, they determined that in an average year the lake receives about two pounds of soluble phosphorus and 27 pounds of inorganic nitrogen for each acre of surface. This brings the Mendota phosphorus-nitrogen level considerably above the "P-N balance" in what might be called "virgin" lake water. Mendota gets most of this fertilizer from creeks which drain farming areas.

A lake into which sewage effluent is being directly discharged gets a huge load of inorganic fertilizer, of course, according to Lea and Rohlich.

Lake currents. Perch fishermen on Lake Mendota have some strange company these days. Angling right alongside the hook-and-line boys are three men with a big brass tube. The three strange fishermen are Meteorologists Reid Bryson, Verner Suomi, and James Verber. Their "bait" is a bathythermograph — a complicated thermometer which measures and records water temperatures.

What these scientists have found so far has knocked limnology texts into a cocked hat:

1) Temperature at the surface of a lake is not horizontally uniform; it may vary as much as four degrees. 2) Some deeper levels show even a greater horizontal variation of temperature than does the surface. At the 20-foot level in Mendota, for instance, the horizontal range may be as much as seven degrees. 3) A lake like Mendota is not only full of currents, but these currents move surprisingly fast. Some below-the-surface currents reach a speed of 60 feet a minute. This is fast enough to move water across a three-mile-wide lake like Mendota in about four hours and a half. Some eddies move up and down.

These strong currents and eddies are responsible for transporting and concentrating algae in such a way as to produce periodic nuisance blooms in parts of a lake, the three meteorologists believe.

Algae culture. Professors Gerald Gerloff and Folke Skoog in the University of Wisconsin botany department have done what nobody has ever done before—reared blue-green algae in the laboratory. And they've found that for optimum growth in laboratory flasks, the species of algae that have been studied require the following parts per million of seven chemical elements in the water in which they grow:

Nitrogen—13.6; phosphorus—.18; sulphur—.82; potassium—1.13; calcium—.25; magnesium—.13; iron—.06.

Algae ecology. Thousands of algae can rest on the head of a pin, and yet Zoologists A. D. Hasler and J. C. Nees are hard at work "counting" and studying them in their natural environment. At least two interesting chapters in the life story of algae have turned up so far. For one

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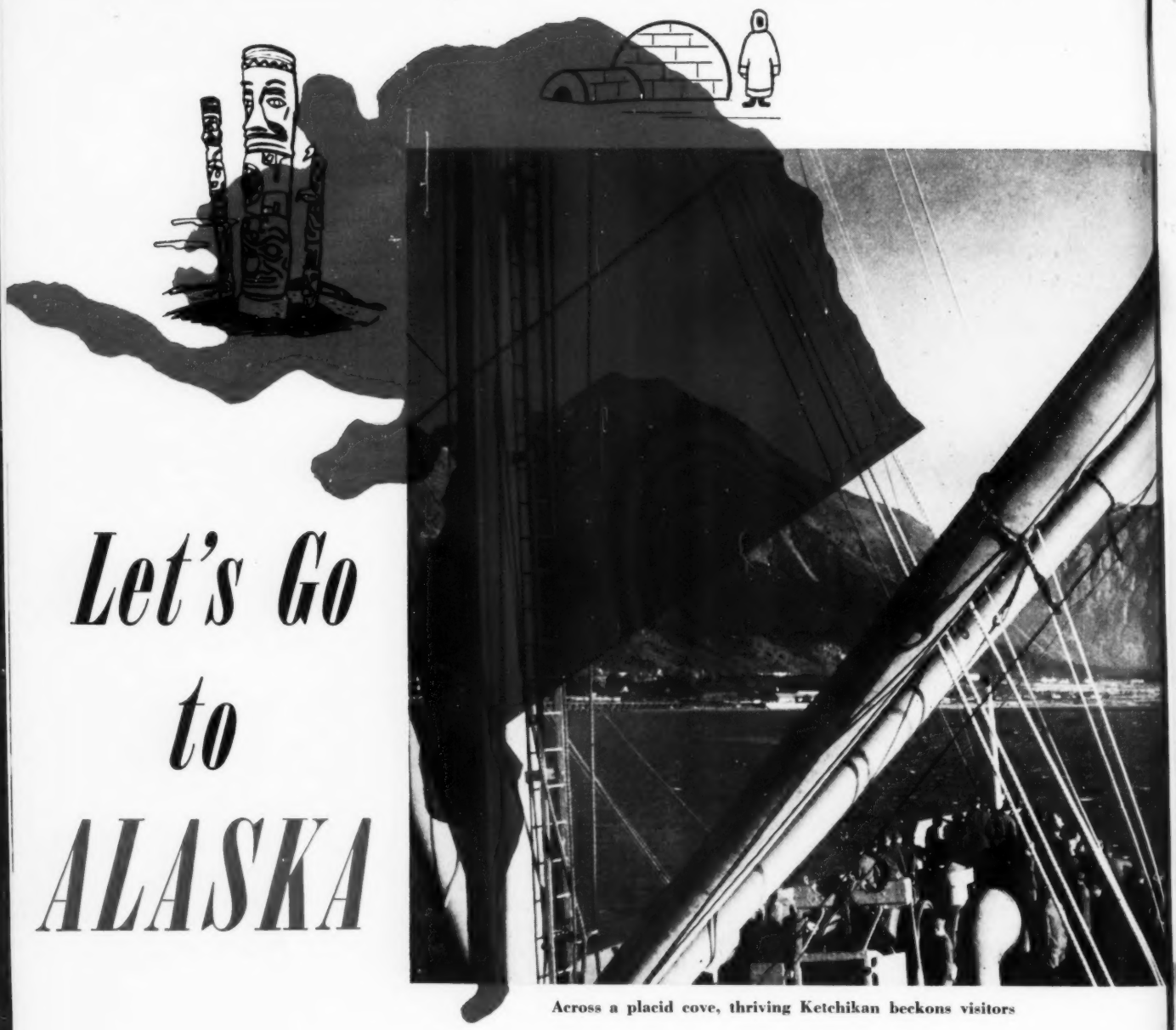
Botanist Folke Skoog grows blue-green algae in laboratory for the first time in history



Let's Go to ALASKA

Across a placid cove, thriving Ketchikan beckons visitors

By JAY ELLIS RANSOM

Dubbed "Seward's Folly" in 1867, this northern frontier has proved skeptics wrong. It's a challenging land of opportunity

ALASKA has held out a mailed fist to seekers after quick wealth ever since the Russian *promishleniki* — the fur-hunting Cossacks from Siberia — rammed open the door in the beginning of the 18th century. When the "Trail of '98" opened the Chilcoot Pass to the Northland, the success of the Klondike and Nome stampedes was due certainly in part to the lure of new frontiers which has always appealed to the American temperament.

Although the 1950 census of our Northern Territory will count about one permanent resident to each five square miles, Alaska has become the fastest growing region under the American flag. After World War II, thousands of adventurous Americans uprooted themselves from the States and moved North.

And why not go to Alaska?

The spirit and traditions of America come to us from our forefathers who invaded the western frontiers a century ago. But today, unlike those hardy wagon-wheel pioneers who faced an unknown future, those who head North can now settle a frontier largely harnessed by the aids and conveniences of modern science. The man-hunting schoolmarm has replaced the man-hunting sheriff; the

plushy big-game sportsman can now use his plane to reach the Alaska game fields where brown bear, moose, or mountain bighorn abound.

When we bought Alaska from the Russians, in 1867, for a bagatelle of $7,200,000 — about two cents per acre — Seward's Folly was facetiously dubbed with such misnomers as "Walrussia," "American Siberia," "Zero Land," "Polaria," and "Icebergia"—all of which represented in the popular mind the prevailing opinion of what Alaska was like.

Sure, it gets cold in Alaska!

But then, so is it downright chilly in winter in Montana, the Dakotas, Wisconsin and Minnesota. In Southeastern Alaska — about on a geographical par with Scotland — the year-round climate is damp and cool. Zero temperature in Ketchikan 1000 miles north of Seattle has been recorded only twice in 20 years; only six times in Juneau 500 miles farther north!

In summer, northeastern Alaska and the interior swelter in tropical temperatures that reach 90 and 100 degrees, scarcely alleviated by the total absence of night as the sun goes round and round the horizon. Even sunstroke is not unknown in Fairbanks. At times thunder storms make one swear he is in the Texas panhandle. And 900 miles south of the North Pole, Eskimos and Whites at Point Barrow on the northernmost tip of the North American continent doff their parkas to perspire freely in summer temperatures of 70 degrees. Truly, Alaska is a land of paradox and surprise.

Now that Alaska is only three and

U. S. Dept. of Interior photo

This farmer takes justifiable pride in his carrots

Prime crop from fertile land

Brown bear with salmon meal

U. S. Fish and Wildlife Service photo

U. S. Forest Service photo

Manufacturers are exploring the tremendous pulpwood potential of Tongass National Forest

The new mining method hasn't entirely replaced the old in Alaska gold fields

U. S. Dept. of Interior photo

a half hours via air from Seattle to Ketchikan, five and a half hours to the territorial capital of Juneau, or nine hours to Nome, the major problem of getting there has been solved. By the longer, slower Alcan Highway, of course, the V-8 descendant of his Model T forebearers can trailer himself, bag and baggage, wife, kiddies and peripatetic pup comfortably in two weeks or less, stopping over in well-kept camps and spas along the entire route from Edmonton, Canada.

In Alaska, it's always open season for land-hungry Americans. More settlers come to settle, to take up 160-acre homesteads or file on five-acre homesites close to the mushrooming cities of the North. On the Forty-Mile and the Tanana Rivers, are vast acreages of land whose only drawback is its inaccessibility except by air. In time, roads will be built to tap this wealth of virgin land.

Incidentally, so much has been written about the Matanuska Valley Project that the average American citizen hardly knows what to believe. We hear of Matanuska settlers starved out, or "froze" out; in contrast, we hear of successful farmers with $20,000-a-year incomes. But whatever one hears, it is very likely prejudiced.

Actually, the Matanuska Valley Project was developed during depres-

The Ketchikan fishing fleet is a colorful part of Alaska's economy

sion times for the avowed purpose of rehabilitating some 200 families from depression-stricken regions in the States. Inevitably, friction, discontent and failure developed in such an off-the-cuff group-settlement of destitute families whose frontier-spirit qualifications were not previously determined. Even today, under government subsidy and help, wherever private farms, business, or other enterprises are undertaken the unfit weed themselves out quickly and make way for the more determined.

Many of the modern-day settlers came from Norway, Sweden, Finland, and Germany to carry on much the same types of farming their forefathers developed in the Old Country. In the Matanuska Valley, as in many other parts of Alaska, dairying, general farming, truck gardening, and hog, cattle or poultry raising bring ample profits. At present, the booming Alaska interior from Anchorage to Fairbanks supplies a market for everything the farmer can raise, and still tons of produce must be imported from the States every year at exorbitant rates. Matanuskans usually sell their produce through their well-organized co-operatives, and in recent years the annual value has risen above the million dollar mark.

Where marketing conditions are favorable, as in the Matanuska-Fairbanks area supplied by the Alaska Railroad, the raising of hogs, cattle, sheep and poultry is another bonanza source of ready income because Alaskan residents do tire of eating moose, caribou and mountain goat.

In the main, the most profitable and successful crops grown are oats, wheat, peas, barley, grasses and legumes, potatoes, all kinds of vegetables, bush berries and fruits. Crops which require a long growing season and hot weather, like corn, squash, cucumbers and tomatoes cannot be grown in the damper portions of Alaska. However, successful hothouse farmers in Fairbanks and Anchorage produce luscious cucumbers and tomatoes which sell for 50 cents apiece and up.

Since Colonial times, the pioneer settler has often faced vast areas of virgin timber. Alaska is no exception, particularly in the coastal regions where the Japanese current supplies the moisture that makes the rain-forests of spruce, hemlock and cedar among the finest in the world. Since 1776 when our forefathers started destroying their timber reserves at a great rate, we have learned much about forest management and the problems of keeping up a sustained yield of good sawtimber.

In Alaska, the present lumber development has grown up around numerous small sawmills in such centers as Ketchikan, Juneau and Fairbanks. The lumber produced by resident or transient labor is used largely for local construction, and the supply has kept pace with the demand for housing, piling, lumber for fish traps, piers, and similar purposes, and in the larger towns, cabinet shops. Since the War, every local mill has operated at full steam to supply the huge demand for forest products.

With the paper shortage growing acute in the States, the possibilities for pulp mills in Alaska have been increasingly explored. The government has finally spent a fistful of money in getting the timber resources cruised for pulp content, and the federal government is offering special inducements such as long-term contracts, payment as cutting proceeds, and other first-come-first-served advantages calculated to attract the large newspaper manufacturers to invest in Alaska. A factor which favors the pulp and lumber industry is the unlimited supply of water power in the forested region.

In the Tongass National Forest and the public domain of Southeastern Alaska, timber cruisers have estimated the stand of virgin timber at 80 billion board feet. Allowing 80 years as the rotation period in that fast-growing climate during which this primeval timber would be logged on a sustained-yield basis, approximately one million tons of newsprint can be produced yearly without depleting the forests. This tonnage represents a fourth of that used by American presses now. Pulp manufacturers have gradually turned their eyes toward Alaska as these figures begin to sink home in the growing need for additional sources of pulpwood.

A contract covering timber cutting rights for 50 years on the National Forest is now held by a pulp company which intends to install soon a 36 million dollar plant at Ketchikan. This will be Alaska's first pulp mill.

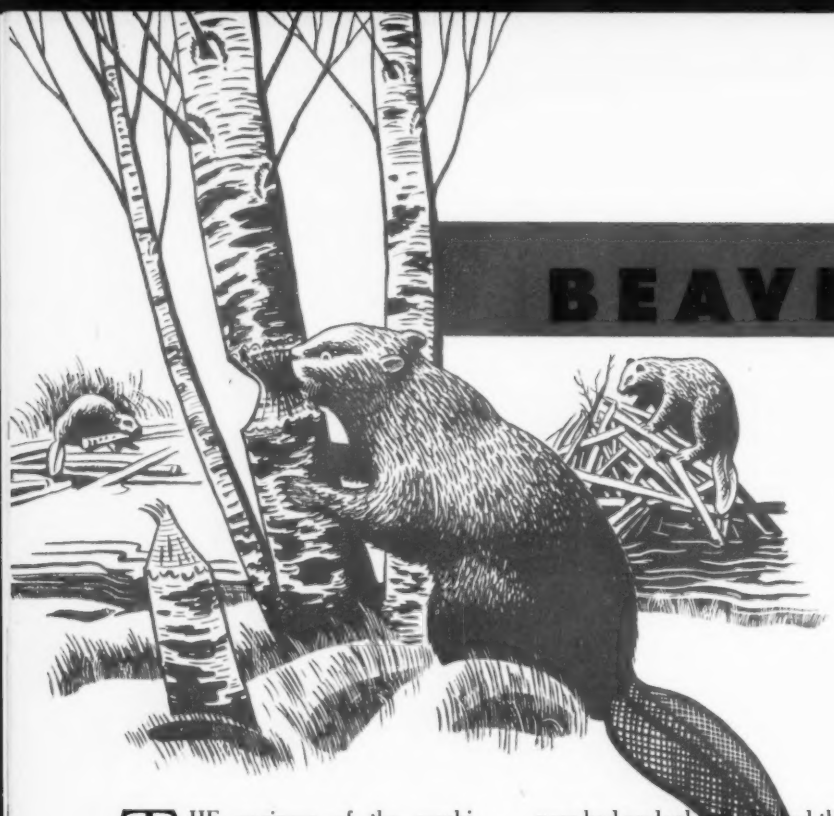
From Prince of Wales Island and hundreds of adjacent islets, comes Sitka spruce, the principal sawtimber tree of the Southeastern panhandle. This timber became famous before the days of duraluminum as airplane stock, being exported in large quantity during the first World War. Nowadays, the Sitka spruce lumber produced here is largely used in connection with defense activities in interior Alaska. It, too, makes a good pulping wood alongside Western hemlock. The coastal forest region comprises 43,000 square miles of Western hemlock and spruce; the

(*Turn to page* 32)

U. S. Fish and Wildlife Service photo

Tenders drive a group of fur seals from the Lukanin hauling grounds on St. Paul Island to loading point for transport to mainland plant

Seal skins—a chief commodity—are barreled by native workmen



BEAVER BOOM

Maine is harvesting profits — and problems — from its prolific little fur-bearing dam builder

By EARLE DOUCETTE

THE engineer of the combination train rolling leisurely along a branch line in Maine was in extra fine fettle that morning. His old engine was purring along as happily as a kitten with its belly full of cream. The June day was fully as rare as the one the poet had sung about. The much publicized life of Riley, he thought, was a dog's life compared with the joys of railroading.

But then the engine creaked around a bend and the engineer stiffened in blank amazement. Dead ahead his roadbed disappeared into a miniature lake; a lake that had no business being there.

Slamming on the air, he dismounted and stared in front of him with the look of a man who is having a nightmare and hopes he will awaken as quickly as possible. He had stopped the train right on the edge of the water. Indeed, little waves were gently lapping at the cowcatcher.

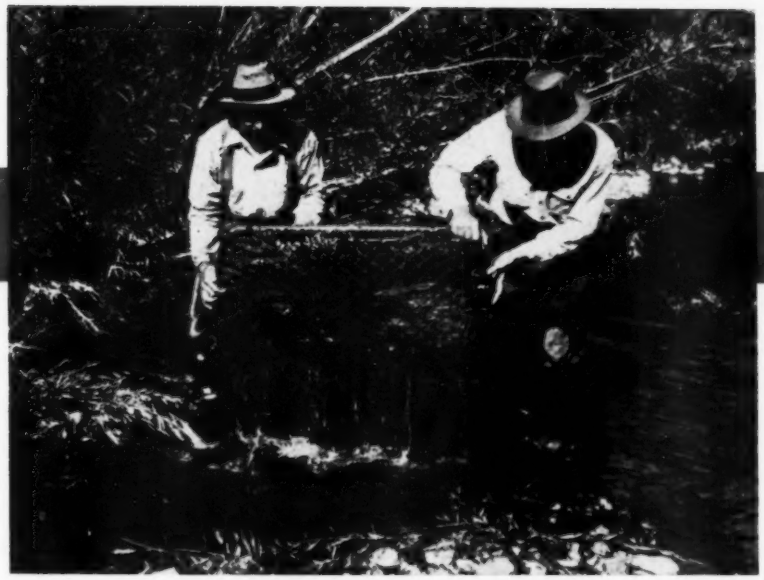
Investigation soon revealed the reason for the nerve-shaking phenomenon. A couple of hundred yards to the left a highway ran parallel to the railway. At one point a culvert had been built under it to afford passageway for the waters of a good-sized stream.

The previous day a family of beavers, evidently hit by the housing shortage, had paddled downstream seeking a new homestead. Arriving at the culvert, the group's chief engineer had undoubtedly surveyed the situation over with much satisfaction. For a long distance the highway ran along a high embankment. All that remained to be done to turn the place into as nice a beaver pond as anyone would want to see was to block the culvert. This the beavers proceeded to do with a right good will. And that is why the flabbergasted engineer found a lake where his roadbed was supposed to be.

Prodding proved that the water was little more than a foot deep so he proceeded cautiously across. Arriving at the next station he notified the maintenance department of the beavers' sneak attack and demanded that war be declared immediately. He reminded the department that, other considerations aside, he had hired out as a railroad engineer and not as a ship's captain.

From then on a battle of wits and patience between man and beaver ensued that had the whole state in a fever of excitement. Days the railroaders would free the culvert and

As a dam builder the beaver ranks par excellent. His handiwork doesn't look very neat, but it's effective



By transplanting beaver from established colonies to new areas, census has been steadily increased

Destructive flooding of surrounding areas often accompanies dam building

nights the beavers would clog it up again. After a week of this stalemate the railroad officials realized that they were fighting a losing game. It was costing them good money in wages to carry on the war, while all it was costing the beavers, as far as anyone could see, was the exercise. Carried on far into the future, as seemed altogether probable, the war would put the branch line out of business.

Faced with this horrible fate, they got in touch with the Maine Department of Inland Fisheries and Game and asked that organization to please make its beavers cease and desist. Not wishing to see the state deprived of part of its transportation system, Commissioner George J. Stobie dispatched two members of the warden force to the scene where they soon trapped the animals in humane traps and transported them far away from the embattled railroaders.

This episode is only one of a great many instances of beaver trouble that have been occurring with increasing frequency in Maine in recent years. The reason for the prevalent commotion is the amazing growth in the state's beaver population. A native humorist has predicted that if the rate of growth continues it is only a question of time before either men or beavers will have to move out of the state to make room for the other.

Twenty-five years ago it is doubtful if there were more than 3000 beavers in the state. In the early 1930's, the population had jumped to over 10,000. Today the Research Division of the Inland Fisheries and Game Department estimates the number as 30,000. Still more thought provoking is the fact that recently the population has been just about doubling every ten years. Where it will all end is anybody's guess.

The present population of 30,000 is a lot of beavers any way you figure it. By way of comparison, the great Hudson's Bay Company considered a yearly take of 50,000 a year extremely nice going, even in the days when the great northeast was virgin territory.

In our generation some forms of wildlife have become extinct and others have approached it, much to the sorrow and alarm of conservationists and nature lovers in general. There have been few rays of light in the gathering gloom.

The strong comeback of the beaver is, therefore, of more than passing interest. It arouses hope that other species, too, may be rehabilitated to something near their former status. The beaver's comeback in Maine is attributable to the application of common sense plus practical knowledge of the animal involved. Thus there is no secret to it. Several other states have used the same methods with equal success; many others could do so if they wished.

The history of the beaver in this country is not complimentary to man. In the early days beaver pelts were in great demand in Europe and were a valuable medium of exchange for the settlers. Consequently our ancestors, always willing to turn a quick dollar, trapped them assiduously if not wisely. Before the turn of the last century beavers were scarcer than Vermont Republicans at a Communist rally.

As long ago as 1899 there was a perpetual closed season on them in Maine, the only exception being the granting of limited trapping rights in areas where beavers might have been causing damage to farm lands or timber. But even with this protection the beaver population failed to increase. If anything, the animals lost still more ground.

For the next quarter century nothing much was done in Maine to rescue the animal from its plight, but then conservationists devised two methods of increasing the population. One was the adoption of a "divide and multiply" theory of propagation. The other was the passage of a law

requiring the stamping of all beaver pelts by wardens, an effective cure for poaching, for no dealer dares handle a pelt that is unstamped.

The divide and multiply principle is so simple that it is a wonder it is not practiced to a greater extent, not only with beaver but with many other forms of wildlife.

In the early days the beaver had been trapped so relentlessly in Maine that it was actually extinct in many counties. The few remaining colonies of the once mighty horde were congregated in isolated communities occupying only an extremely small part of the state's total area. The beaver doesn't travel very far in his lifetime and so these vast beaverless areas remained unpopulated.

All this being so, conservationists reasoned, why not take healthy specimens from the existing colonies and transport them to new territory where they would multiply and, eventually, become so numerous that their numbers could, in turn, be divided to furnish stock for still other beaverless territories? The plan works something like a chain letter. You divide and multiply until before you know it you are working in astronomical figures. And, best of all, about the only initial cost involved is the transportation of the animals. The idea was tried on a small scale and it worked out just fine.

However, it remained for Commissioner George J. Stobie, present head of the Maine Department of Inland Fisheries and Game to grasp the full significance of the situation shortly after he was appointed to office in 1929.

Maine, mused Stobie, could well have been created as a beaver's paradise. One of the most watery of all states, it has 2500 lakes, 5000 streams and no one knows how many brooks. It has 16,750,000 acres of forest land. Why, then, couldn't the beaver be propagated to a point where it not only would be a highly acceptable addition to other species of wildlife but, too, could become an important cash crop for Maine citizens, particularly for farmers who do a little trapping during the dull winter months to pay their taxes and other running expenses?

He made beaver propagation a major project of his department. Department planes even flew the animals in to territory otherwise hard to reach.

The success of the program has been astounding. The animals have multiplied so fast that it has been possible to allow a growing amount of trapping without halting the steady population increase. In 1932 only 489 of the animals were trapped. By 1936 the number had grown to 1018 and in recent years it has hovered around 5000. Where it will all stop is anybody's guess, but trappers are hoping now that a 10,000 yearly crop in the near future will be possible. At present prices that would bring them considerably better than a half million dollars.

Needless to say, trappers are heartily in favor of the rapidity with which Maine beavers have been perpetuating themselves, particularly since the increase has coincided neatly with a decided jump in popularity of beaver fur among the ladies.

In its natural state beaver is a heavy, somewhat rough appearing fur. In recent years, however, furriers have developed methods of shearing the pelt so that it is soft, rich, lustrous and exceedingly long wearing. A fairly good beaver coat sells for $1500.

Maine beaver pelts go for top prices in the fur markets and trappers found they could get $75 for their best pelts, a decided advance from the old days when $20 was considered a good price.

Many of them have made spectacularly good money, even for these times. Top man in a recent year made $7000 in 70 days. Others have cashed in at the rate of over $1000 a week for shorter periods. In all, the program has been a magnificent success.

Although it will be generally agreed that the beaver is a noble animal and has much to recommend him, his very industriousness gets him in trouble at times. A beaver can't take a culvert or leave it alone. For some obscure reason he seems to hold to the firm belief that they were built for the express purpose of being plugged up so that the immediate countryside could be turned into a beaver pond. Farmers who find their choice pastures hip deep in water take a dim view of these shenanigans, and under no circumstances would vote for the beaver as animal of the year.

And beavers have caused more profanity among game wardens than all other animals combined, for upon them falls the duty of freeing the culverts that are plugged up.

One warden, in particular, swears that he could never learn to love a beaver though he were related to one. One day last year he and two others were called on to free a 40 foot culvert that the animals had plugged from one end to the other with sticks, stones, mud, spare automobile parts, beer cans and anything else the countryside afforded, thereby flooding a wide area. Working from the dry, downstream end, he entered the culvert and tugged away at the unholy mess. When the job was about half completed he heard an ominous rumble and then the whole thing, weakened by the impounded water, let go. Before he could scramble to safety, the full force of the rushing water hit him and spewed him out of the culvert as though he had been shot out of a giant firehose. A hundred yards downstream he disentangled himself from a pair of highly indignant beavers and scrambled ashore, a firm believer that all beavers should be liquidated.

An incredible amount of misinformation has been written about the

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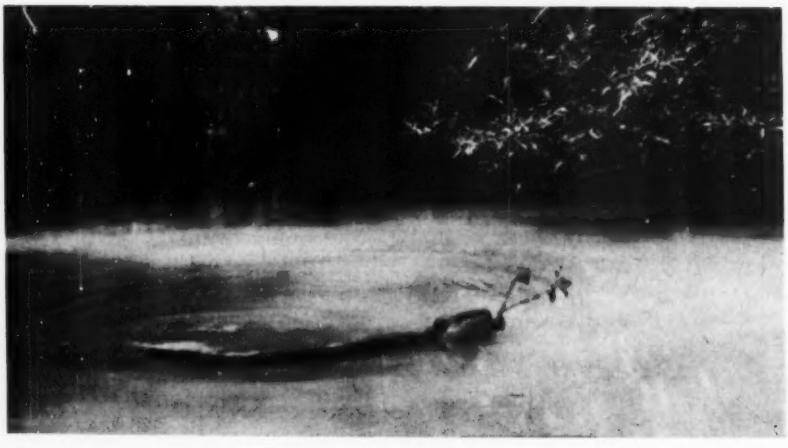
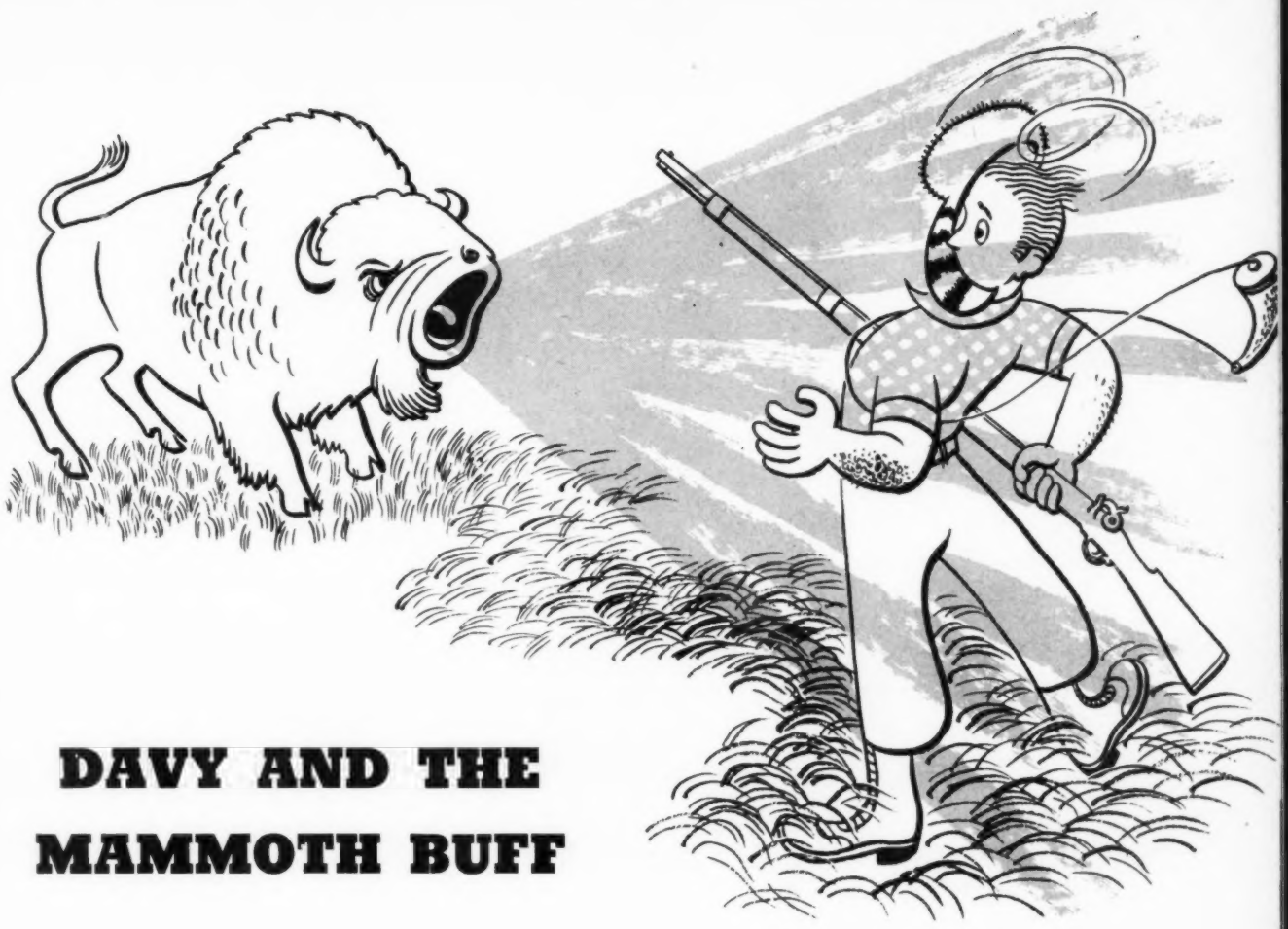
The hard-working beaver doesn't dawdle when water or enemy has damaged his home





DAVY AND THE MAMMOTH BUFF

By JAMES STEVENS

"IT WAS President James K. Polk himself who first spoke the famous and true statement that Davy Crockett could run faster, dive deeper, stay under longer and come up dryer than any other mortal in all creation," said Uncle Ben Cotter.

He spoke on, in truthful tone, with solemn eye.

"James K. Polk went on to remark that Davy Crockett could take a steamboat on his back, stand three streaks of lightning without dodging, turn quick, and bend the fourth streak backwards with one rifle ball. Mr. Polk also praised up Davy for being so polite under any circumstances. He said, why, once a screeching stranger jumped on Davy and tried to bite off his nose, for which Davy only asked him kindly, 'Do you cal'late to be oncivil?' Davy Crockett was the mightiest of hunters but he could win a dumb creature into doing nigh on anything for him. Once he trained a great gray goose to kill panthers by swooping on one and hooking his gander neck around the cat's throat. 'Charlie,' he called the goose—'Choker Charlie.'

"And who else but Davy Crockett would have tracked Old Boo, the wildest buffalo bull in Oregon territory? Who but Davy could have broken the buffalo cows of Oregon to milk? James K. Polk asked the questions, not me. It was long before he was President, of course," stated Uncle Ben. "It was in a speech at Nashville settlement, the one in which he named Davy Crockett 'the yaller blossom of the forest.' Yes, Davy had his gentle side. He liked cows. He liked to milk."

Uncle Ben Cotter stopped there to load his pipe and eye me sidewise, over the cookhouse table. I was eating under lantern light. I'd been out milking two Shorthorn cows that Uncle Ben had borrowed off the range, with their new calves, so as to provide some fresh milk for his seven loggers and mill hands. They were hard to hold, now in the wheat-heading season. Tonight I was ready to quit myself. The Shorthorns were not wild beef but they were not dairy pets, either. Milking, picketing, and hand-feeding the calves made a pile of extra work on my regular chores of swamping around mill and logging and bullcooking for Aunt Min Cotter and her 15-year-old hired girl, Susie Makin. I was 12.

They had left me a cold supper of brown beans and bear hash. I sat alone in the lantern light, brooding about having to eat this way after dark and it the middle of July. If I was to quit, then Uncle Ben would take me to my folks. The thought of

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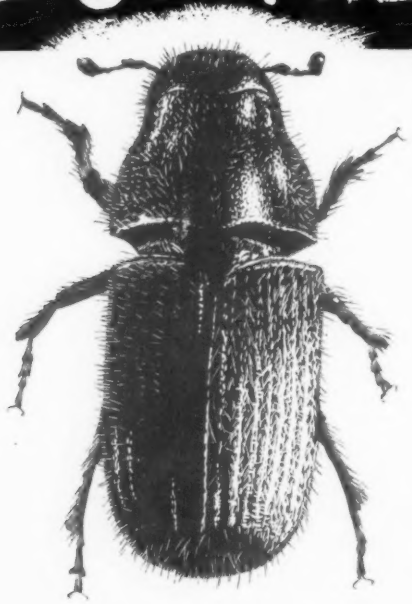
A belligerent bison gives our hero some uneasy moments in this sixth chapter of Davy Crockett folklore

Aerial view of Flat Tops wilderness, original location of insect outbreak

BATTLE OF THE B



Opening salvo of this battle of the Rockies, as recorded last June by Leland J. Prater, USFS

William McCambridge, left, and Harland Arnold examine ravished forest to determine areas needing more intensive survey work

F BEETLES

ON the western slopes of the Colorado Rockies, where in the past decade the spruce bark beetle has killed four billion board feet of Engelmann spruce on hundreds of thousands of acres in the White River, Arapaho and Routt National Forests, a second chapter in the battle of extermination hinges at press time on slim chances of congressional approval.

This beetle is not new to the western forest country. Until a few years ago, however, parasites, predatory insects and birds helped to keep the population at low levels. But in 1939, steady, blowing winds that sometimes reached 70 miles an hour blew down thousands of Engelmann spruce in the wildest portions of the forest. The wind-blown trees became a haven for the beetles. Within three years they shifted to the green, standing trees, and a year later a raging epidemic was under way.

The attack centered in the northern division of the White River National Forest, and at first there was hope the infestation would burn itself out right there. But the beetles soon were wind-blown to fresher, greener forests 25 to 30 miles distant.

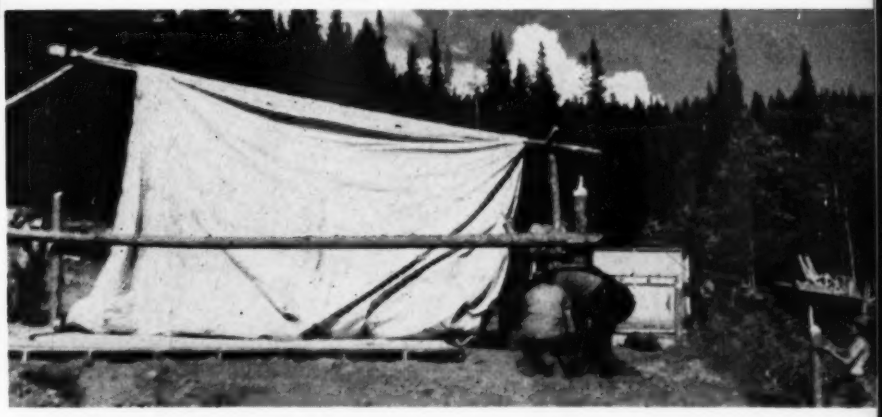
The U. S. Forest Service enlisted the aid of the Bureau of Entomology and Plant Quarantine to plan the first phase of the big battle to come. A survey was made to determine extent of the outbreaks and the habits of the beetle. After necessarily lengthy experimentation on control measures, foresters and entomologists in the spring of 1950 came to grips with the enemy.

Within ten days of the go ahead signal several hundred of what was finally a force of nearly 1,000 men had been trained for combat. "Ammunition" was *orthodichlorobenzene* —a liquid the men call "goop."

Throughout the summer campaign, the beetle fighters constantly improved their techniques. They made real progress toward safeguarding our precious resources. Now, as you read this, combat teams are again ready to launch another summer's work in the battle of the beetle. The Senate is willing to vote the necessary $345,000, but the House is demurring.

Access road penetrates Parkview Mountain area in the Arapaho National Forest of Colorado

Rude camps like this one at Elk Mountain served as command posts in 1950 "Operation Beetle"



Orthodichlorobenzene—"goop" to the initiated — was battle ammunition

Foreman instructs new recruits in battle tactics and use of "ammunition" in Elliot Creek area of the Arapaho National Forest

Checking and tallying diseased trees is important operation. "F" indicates full treatment and "S" stump treatment only

Complete seven-man treating crew includes foreman and two nozzle crews, each with a nozzle man, pump man and "goop" carrier

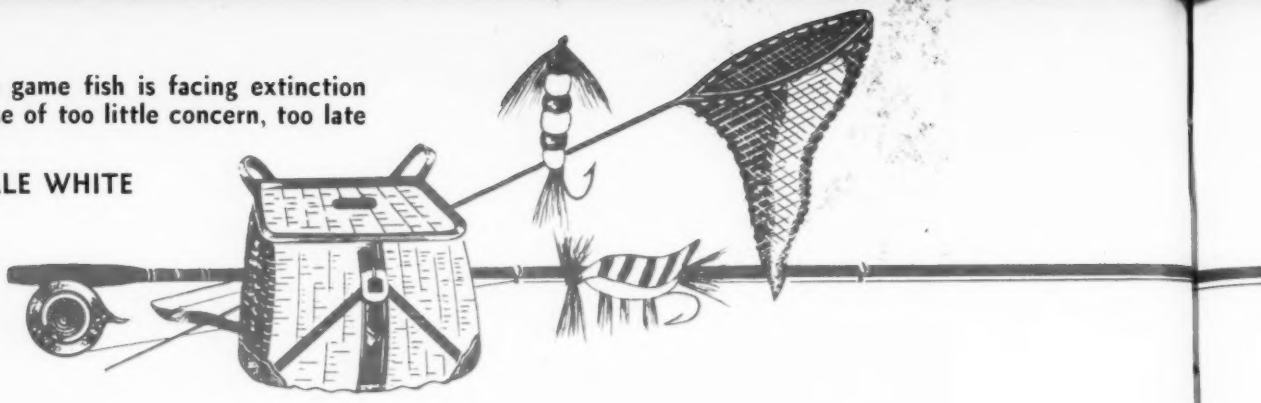
When roads end, horses pack the treating fluid to workers deep in Arapaho forest

Outdoor work develops the appetite. Hot meals are served in morning and evening

Forest Inn Lodge on White River Plateau is surrounded by ruined Engelmann spruce

A fine game fish is facing extinction because of too little concern, too late

By DALE WHITE



We're Gambling With O

IS THE Montana grayling facing extinction?

Very possibly . . .

Not as spectacularly as the Michigan grayling which vanished in one season despite frantic, last minute efforts to save it . . . but the margin for survival is far too slim. One heavy winter kill of the scarce and scattered remnants of this fighting game fish native to Montana would put it in the category of other sporting game now extinct or struggling for survival because of too little concern, too late.

We're gambling with the only species left in the United States . . . and until last fall we were losing!

Prior to 1885 the famed Madison River was swarming with this fighting gray ghost with the enlarged purple dorsal fin. In the next ten years Loch Levens were planted in the tributary Firehole. By 1926 when rainbow were introduced, the grayling had disappeared as a game fish.

The story was the same in the major streams tributary to the Missouri above Great Falls. Never widespread in its distribution but reportedly abundant where it did exist, the Montana grayling has been losing steadily its battle against natural and man-made hazards, and neglect.

In 1921 28 million grayling eggs were harvested at Georgetown Lake in southwestern Montana, largest grayling egg source in the world. By 1950 only a million and a half eggs were taken.

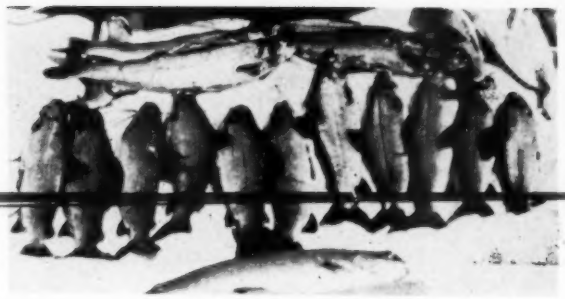
An hour's catch from Grayling Lake in Montana

Meanwhile Grebe Lake in Yellowstone Park, major source of eggs for the U. S. Fish and Wildlife Service, has seen its egg harvest drop from four million annually to 200,000 last spring. When Grebe began to show signs of serious depletion in 1949, alarm was voiced. The threatened loss has since become a stark reality. Fish culturists predict Grebe will lose its few remaining grayling before another spawning season.

The answer is no mystery. Competition from all species of trout and insufficient supply of food suitable for grayling fry in their first four months of existence have been the principal killers. Had Montana not given the grayling assistance, it is not too probable that Grebe alone would be the only source of spawn in the country today. Now Grebe is all but out of the picture.

The responsibilities for saving this unique fish rest solely with the Montana Fish and Game Commission. A sincere but bare-survival-level program of grayling management, due to a deficiency in knowledge of the grayling and an inability to raise sufficient numbers to legal size for planting, is at last being scrutinized. Only one federal hatchery (at Ennis, Montana) has been successful in producing the desirable high percentage of adult grayling, with eggs supplied from Grebe.

Here the picture is bright and filled with hope since the U. S. Fish and Wildlife Service early last November gave its Ennis hatchery superintendent, Harry W. Baker, Jr., the green light in holding the entire 1950 Grebe crop for brood stock development and improvement and strengthening through selective breeding.



Our *Grayling*

There are only four sources of grayling eggs left in the United States, since efforts to establish the species in several western states and Michigan have been futile. Three minor ones are Grebe, Agnes Lake high in the Pintlar range in southwestern Montana, and Rogers Lake in the Flathead Lake area. Stock in all three is in poor condition.

The largest is man-made Georgetown Lake, 40 miles west of Butte, where the adult grayling coming into traps for stripping totals under 5000. Two factors which will be discussed later make the fate of grayling in Georgetown none too secure, but this is the only place in the entire country where grayling may be caught regularly in any number to justify their being included as a game fish.

No freshwater fish has so baffled the efforts of man to assist its survival, nor been a greater victim to the unintentionally destructive practices of man. The blame lies not with those who have worked to protect it, but rather in what fish culturists and progressive sportsmen now recognize as outmoded hatchery methods and management theories. Possibly the same stubbornness and fighting qualities which make it a thrill to catch on a No. 14 dry fly have kept it surviving against incredible odds.

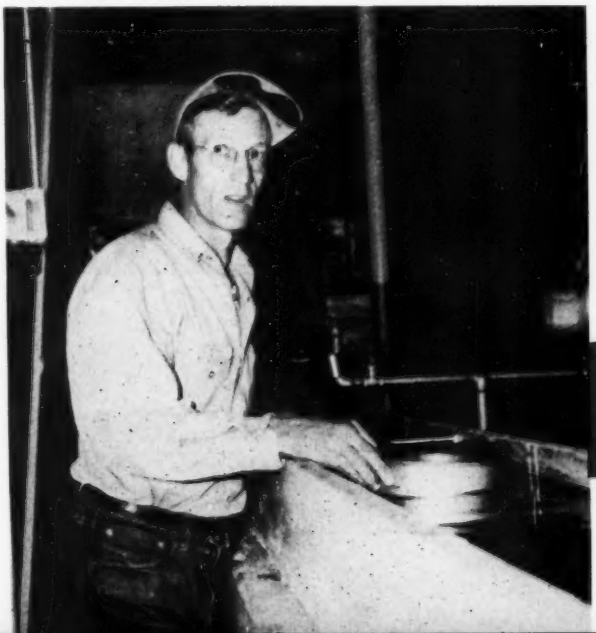
Relic of the glacial age, there are . . . or were . . . three closely allied species of grayling on the North American continent, plus two or three in Europe. (For taxonomists, they are three subspecies of *Thymallus signifer.*) The Arctic grayling or *poisson bleu* of the trappers abounds in Alaska and the adjoining Mackenzie district of British Columbia.

The Michigan grayling no longer exists. In the United States we have now only the Montana grayling.

Although mentioned by Lewis and Clark in their diaries as a new kind of white or silvery trout caught on the headwaters of the Jefferson, it was not recognized until 1872 when

(*Turn to page* 44)

Photos by Jim Edwards



Lest. Harry W. Baker, Jr., superintendent of the U. S. Fish and Wildlife Service hatchery at Ennis, Montana, feeds grayling. Above, grayling eggs are hatched in jars at Montana's largest hatchery, located in Anaconda

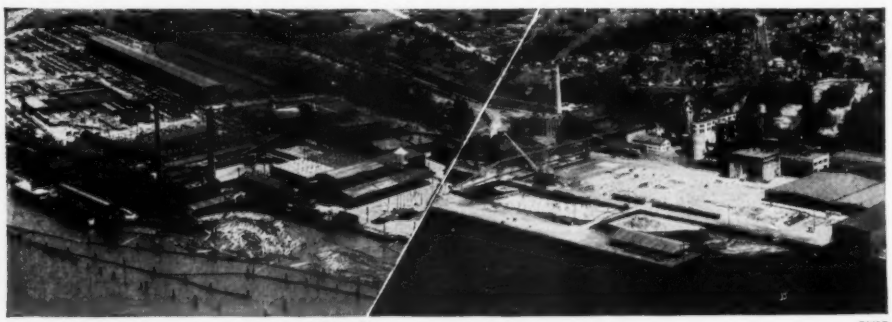
CITIES WITH A FUTURE

Everett's protected harbor and ideal location make it one of the busiest ports on Puget Sound. From here wood products are shipped from Everett to all parts of the world.

Nature's rugged forest beauty makes an ideal background for this beautifully landscaped garden, typical of Everett. Timber areas in and around Everett have been set aside as permanent recreation spots.

Everett is the center of trade for a large area. In Everett itself is much of the industry which supports the farming and lumbering of the surrounding territory.

Second only to lumbering in importance are farming and dairying. In the Everett area are many of the world's finest dairy herds.



LUMBER PULP

VISITORS WELCOME. This is the Weyerhaeuser branch plant at Everett. You are cordially invited to visit Everett—and to see this modern wood processing operation.

NO. 4 OF A SERIES

EVERETT

WASHINGTON

EVERETT, Washington, is truly a city "with its roots in the soil." Almost its entire economy is based on renewable resources . . . timber and agricultural products. Located on Puget Sound, and just 25 miles west of the snow-capped Cascades, the valleys surrounding Everett produce varieties of berries, fruits, vegetables and dairy products of such remarkable quality that they're in demand throughout the nation. A big share of the mountainous lands of this area are in Certified Tree Farms. In fact, the Chamber of Commerce here has adopted the slogan, "The Evergreen City;" it fits Everett like a glove.

The first of the Weyerhaeuser Timber Company production plants was established here in 1902. It has been going strong ever since and has been steadily expanded, including the addition of a pulp plant. Timber supplies come from the Company's Vail and McDonald Tree Farms to the south, and from the newly established Skykomish Tree Farm to the north. When you visit the Pacific Northwest plan to visit Everett . . . another City with a Future.

WEYERHAEUSER
SALES COMPANY
ST. PAUL, MINNESOTA

WEYERHAEUSER TIMBER IS A CROP FOREST PRODUCTS

REPORT ON AMERICAN BIG TREES

In September 1940, The American Forestry Association launched a campaign to locate the largest living specimens of American trees. After ten years of diligent search by cooperating individuals, the following list of "champions" is being run serially until completed. Common and botanical names listed conform to "Standardized Plant Names" issued by the American Joint Committee on Horticultural Nomenclature. Identification and measurements are by nominators. The challenge is to locate trees larger than those listed, if they exist, and also giants of species not listed. Send all reports to The American Forestry Association, 919 Seventeenth Street, N. W., Washington 6, D. C.

Part III

Species	*Circumference at 4½ feet*	*Spread*	*Height*	*Location of Tree and Nominator*
JUNIPER				
Alligator, *Juniperus pachyphloea*	19′11″	70′	71′	Coronado National Forest, New Mexico. Rex King, Albuquerque.
Common, *Juniperus communis*	1′10″ (at 6″)	6′	5′	Black Hills, South Dakota. Harry R. Woodward, Pierre.
Rocky Mountain, or Utah, *Juniperus scorpulorum*	26′8″	....	45′	Cache National Forest, Utah. R. P. McLaughlin, Logan.
Sierra, *Juniperus occidentalis*	40′11″	....	80′	Stanislaus National Forest, California. J. R. Hall, Sonora.
LARCH				
Eastern, or Tamarack, *Larix larcina*	9′8″	75′	90′	Tamworth, New Hampshire. Charles H. Porter, Tamworth.
Western, *Larix occidentalis*	24′	....	120′	Near Kootenai National Forest Montana. Elers Koch, Missoula.
LAUREL				
California, *Umbellularia californica*	36′9″	....	....	Near Eleanor, Humboldt County, California. T. J. Starker, Corvallis, Oregon.
Mountain-, *Kalmia latifolia*	2′7″	....	....	Great Smoky Mountain National Park, Tennessee. S. Glidden Baldwin, Danville, Illinois.
LINDEN: BASSWOOD				
American, *Tilia americana*	16′3″	75′	105′	Camelback Mountain, Monroe County, Pennsylvania. George W. Raish, Tannersville.
Beetree, or White, *Tilia heterophylla*	17′3″	....	....	Near Coldwell Corners, Delaware. William S. Taber, Dover.
Gulf, *Tilia leucocarpa*	9′8″	51′	114′	Whittington Park, Hot Springs, Arkansas. Kendall Laughlin, Chicago, Illinois.
Palmer, *Tilia palmeri*	7′5″	47′	61′	Scarritt Point, Kansas City, Missouri. Kendall Laughlin, Chicago, Illinois.
LOCUST				
Black, *Robinia pseudoacacia*	15′8″	40′	60′	Hyde Park, New York. H. F. Hedgecock, Poughkeepsie.
Common Honey-, *Gleditsia triacanthos*	18′9″	112′	92′	Near Queenstown, Maryland. F. W. Besley, Baltimore.
LYSILOMA				
Bahama, or Wild Tamarind, *Lysiloma bahamensis*	8′	....	....	Key Largo, Florida. Charles C. Deam, Bluffton, Indiana.
MADRONE				
Pacific, *Arbutus menziesi*	27′8″	....	....	Humboldt County, California. R. H. Menzies, San Francisco.
MAGNOLIA				
Bigleaf, *Magnolia macrophylla*	6′7″	64′	59′	Baltimore, Maryland. F. W. Besley, Baltimore.
Cucumbertree, *Magnolia acuminata*	18′4″	60′	125′	Great Smoky Mountain National Park, Tennessee. S. Glidden Baldwin, Danville, Illinois.
Fraser, or Mountain, *Magnolia fraseri*	7′7″	54′	65′	Great Smoky Mountain National Park, Tennessee. S. Glidden Baldwin, Danville, Illinois.
Southern, *Magnolia grandiflora*	14′4″	....	110′	Near Brooksville, Florida. Lisa van Browsky, Brooksville.
Sweetbay, or Swamp, *Magnolia virginiana*	6′	....	....	Near Camden, South Carolina. Henry Savage, Camden.
Umbrella, *Magnolia tripetala*	4′3″	....	....	Lawrenceville, New Jersey. C. W. Schisler, Trenton.
MAHOGANY				
West Indies, *Swietenia mahagoni*	7′3″	47′	37′	Near Miami, Florida. George N. Lamb, Chicago, Illinois.
MANZANITA				
Whiteleaf, *Arctostaphylos viscida*	7′4″	24′	21′	Lassen National Forest, California. Clyde W. Lewis, Sterling City.
MAPLE				
Bigleaf, *Acer macrophyllum*	28′	66′	....	Near Haydens Bridge, Lane County, Oregon. Oliver V. Matthews, Salem.
Black, *Acer nigrum*	9′2″	81′	78′	Turkey Run State Park, Indiana. Kendall Laughlin, Chicago, Illinois.

(To be continued in next issue)

Family Camping is Fun

If the high cost of vacations is keeping you home, see what the state and national parks have to offer — it could be the answer

By PAUL F. RUNGE

IF YOU'VE dreamed of a vacation to some of America's beauty spots, but have held back because of the high cost, maybe the many state and national parks will provide your answer. They did for us.

Our family took a 16-day, 4000-mile tour covering 17 states and one province of Canada for $68—just $18 more than it would have cost to live the same period of time at home. This, of course, did not include the cost of gas and oil (approximately $80), but the figure does give an idea of the savings that are possible through use of the national parks system instead of conventional tourist facilities.

Our canvas home was pitched from Atlanta, Georgia all the way up the Eastern seaboard into the New England states, then across Ontario, down into the Midwest and back through the Southern states on our return home. Our every stop was made at a state or national park.

By going the first part of June last year we literally followed spring in its northward trek. Dogwoods which had been at the peak in Atlanta were just beginning to be in their glory in Connecticut. Wildflowers which had finished blooming in Georgia were just beginning to burst from the ground in the mountains of Virginia.

The state and national parks are generally located at some historic or scenic spot, so we were assured of seeing more than does the casual tourist. Park sites also are less exploited and therefore not as crowded with tourists trying to spend their dollars on commercialized attractions.

They range through every state, and all the ones at which we stayed can be classified as from good to wonderful. Probably the best we encountered on our trip were in upper New York state. There was much more to see than we had anticipated.

Over a period of years we had accumulated camping equipment hoping some day to take a trip of this kind. With the conveniences of air mattresses, sleeping bags, portable ice box, gasoline stove and lantern, and the umbrella type tent, our trip proved to be every bit as comfortable as staying in conventional quarters, to say nothing of the additional fun.

While a lot of our equipment was war surplus, and therefore economical, certain items were chosen with great care because of the comfort factor involved with the family-type camp. The umbrella tent was chosen because it could accommodate all five of us comfortably, and yet it could be pitched by one person in a matter of a few minutes. It provided head room so that we could stand up, and it could be rolled into a compact bundle for travel.

The gasoline stove was chosen because we felt that quick heat was bet-

(*Turn to page* 43)

NEWS IN REVIEW

Montesano and Elma, forest-born communities in Grays Harbor county, Washington, will share the spotlight June 23, when the 10th anniversary of the Clemons Tree Farm is observed there with public ceremonies headed by Governors Arthur B. Langlie of Washington and Douglas McKay of Oregon. The first certified Tree Farm in America, the Clemons tract of the Weyerhaeuser Timber Company was formally dedicated to forest crops in June, 1941. This month's observance is planned to reflect the county's and state's pride in being the birthplace of the American Tree Farm movement, which has spread to 29 states and now embraces more than 23 million acres of privately owned forest lands.

Notables from all parts of the nation are expected to be on hand for the occasion.

* * *

The Executive Committee of the Louisiana Forestry Association has named James H. Kitchens, Jr., Executive Secretary of the Association. Kitchens has been serving as Acting Executive Secretary since the death of John B. Ferran in March. A graduate of L. S. U. Forest School, Kitchens has been assistant state forester and chief of the Information and Education Branch of the Louisiana Forestry Commission since 1940. He is currently chairman of the Southern I and E Chiefs, chairman of the Gulf States Section, Society of American Foresters, and chairman of the Public Relations Division, SAF.

James H. Kitchens named secretary of Louisiana Forestry Association

The election of Dechard A. (Deck) Hulcy as the new president of the Chamber of Commerce of the United States, was announced recently at the close of the Chamber's 39th Annual Meeting. Hulcy, a native of Texas, has served on the Chamber's board of directors since 1946 and was a vice president during the past year. Starting as an accounting department clerk for the Lone Star Gas Company, Dallas, Texas, in 1920, he is now president of that company and of the American Gas Association.

The Chamber's new president terms himself "just a lucky Texas country boy," but to industry he is known as one of the originators of the American Gas Association's famous Promotion, Advertising and Research Committee, and an early advocate of the Texas Railroad Commission's campaign to stop the waste of casinghead gas, a waste which he has been instrumental in curbing.

* * *

J. Herbert Stone of Atlanta, has been appointed regional forester of the Pacific Northwest region, with headquarters in Portland, Oregon, according to a recent announcement by Lyle F. Watts, Chief of the U. S. Forest Service. Stone will fill the vacancy created by the death of Horace J. Andrews, who died recently in an auto accident in Washington, D. C. Stone has been southern regional forester for the Forest Service since 1946. He has had extensive experience in timber management, having been actively engaged in the field of forestry since 1927. He served as a representative of the Forest Service at the Third World Forestry Congress held in Helsinki, Finland in 1949.

Chief Forester Watts states that Charles A. Connaughton, director of the Southern Forest Experiment Station in New Orleans, has been appointed Stone's successor as a regional forester of the Southern Region. Connaughton has been director of the Southern Forest Experiment Station since 1944. He has been in the field of forestry since 1928, having served in a variety of positions in forest research and as a forest ranger in national forest administration.

* * *

Richard G. Gearhart, formerly of the Michigan Department of Conservation, has been named manager of the American Forest Products Industries Western regional office in Portland, Oregon. Harold Olson, AFPI's only representative in the area for the past seven years, has been named chief of the forestry organization's Western News Bureau.

AFPI recently established a field office in Atlanta, Georgia, to serve the southeastern states with Charles Edward Stout, former field representative of AFPI for the entire south, being named manager. Edward L. De Motte, former co-publisher of Alabama Lumberman, has been named manager of the southern field office in New Orleans.

* * *

Scholarship awards of $400 each have been presented to four young men, chosen as the nation's outstanding forestry school students majoring in wood utilization, by the National Lumber Manufacturers Association. Recipients are John Zerbe, Pennsylvania State, State College; Aldos Barefoot, University of North Carolina, Chapel Hill; Dan Remington, University of Minnesota, Minneapolis; and Richard Pentoney, New York State College, Syracuse. The award winners will receive ten weeks of summer training in the Timber Engineering Company Research Laboratory, Washington, D. C., beginning June 25.

* * *

Donald M. Rochester, formerly manager of the Industry Division of American Forest Products Industries, has been named secretary to the community relations committee of American Paper and Pulp Association. He will work under the general supervision of a 12-man industry committee, headed by N. H. Bergstrom,

Donald M. Rochester joins American Paper and Pulp Association

president of the Bergstrom Paper Co., Neenah, Wisconsin.

* * *

Christopher M. Granger and Earl W. Loveridge, assistant chiefs of the Forest Service, received U. S. Department of Agriculture distinguished service awards from Secretary Charles F. Brannan at ceremonies on the Washington Monument Grounds May 15. The award is the highest given by the Department to its employees.

In the citation Secretary Brannan commended Granger for his dynamic leadership in administering national forest activities. Since 1935, when he was appointed assistant chief in charge of the Branch of National Forest Administration, the timber cut on national forests has increased from less than a billion board feet a year to more than four billion board feet a year; recreational use of national forests has increased 60 percent; and total receipts from national forests have increased ten times.

Loveridge, assistant chief in charge of the Branch of Administrative Management and Information, was commended for his contributions to scientific management and for the development of a comprehensive inspection system. His efforts have resulted in more effective use of Forest Service manpower and materials.

* * *

Daniel L. Goldy, Region I (Pacific Northwest) administrator for the Department of Interior's Bureau of Land Management, has resigned his post to take a new assignment in Paris, France with the Economic Cooperation Administration, according to an announcement from Secretary of the Interior Oscar C. Chapman. The resignation took effect May 11.

Succeeding Goldy in the post, which includes jurisdiction over the controversial O and C timber program involving more than two and one-half million acres, will be Roscoe E. Bell, previously an associate director in Washington, D. C., for the Bureau of Land Management. Bell is committed to continue the right-of-way and sales policies instituted under Goldy's administration, one which had small and large operators in constant furore.

* * *

The resignation of Dr. James P. Adams as provost of the University of Michigan was announced May 11 by the board of regents. Provost Adams delivered the major address at the AFA 1950 annual meeting in Eagle River, Wisconsin.

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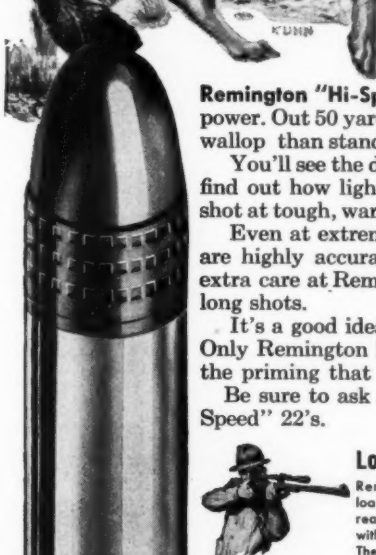

Remington "Hi-Speed" 22's are loaded to the limit for power. Out 50 yards they're going faster, and pack more wallop than standard cartridges develop at the muzzle!

You'll see the difference in your own shooting. You'll find out how lightning speed pays off when you get a shot at tough, wary small game.

Even at extreme range Remington "Hi-Speed" 22's are highly accurate. A specially designed bullet, plus extra care at Remington, comes through for you on the long shots.

It's a good idea to stick to Remington ammunition. Only Remington has patented "Kleanbore" priming—the priming that cannot rust or corrode a rifle barrel.

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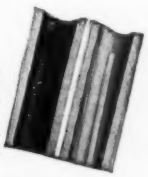
Remington "Hi-Speed" 22's are loaded to the limit for power. They'll reach out . . . and drop your game with knockdown, knockout power. They deliver the wallop you need for pests.



No more gun cleaning

After 30,000 rounds with "Kleanbore" priming, barrel on right is spotless. But 30,000 rounds with old-fashioned corrosive priming ruined barrel on left.

How's this for shock power?

This cake of laundry soap was blasted by a Remington "Hi-Speed" hollow point 22. That's power aplenty to drop *any* small game.

"If It's Remington—It's Right!"

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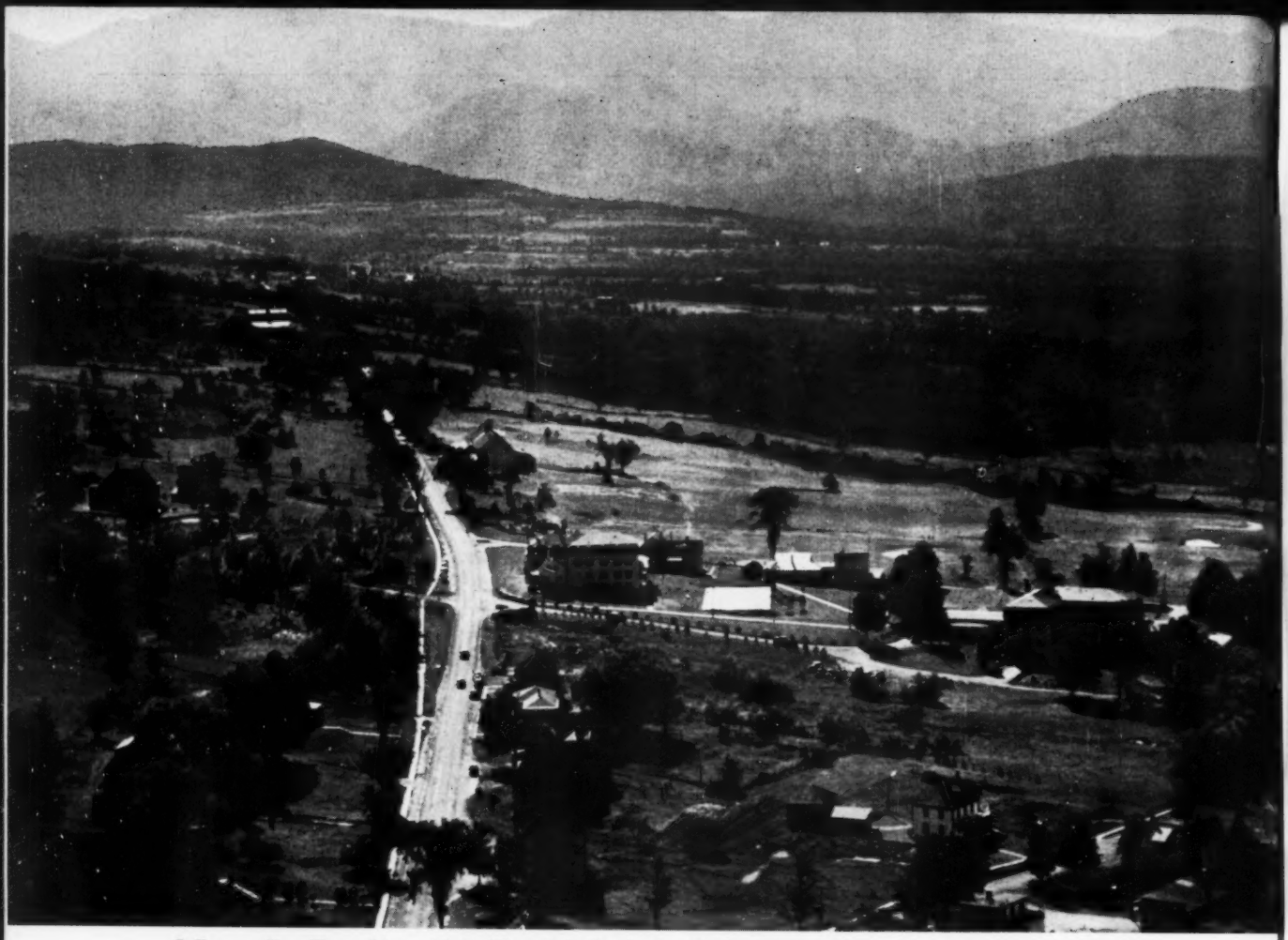
"Hi-Speed" and "Kleanbore" are Reg. U. S. Pat. Off. by Remington Arms Company, Inc., Bridgeport 2, Conn.



Jefferson, New Hampshire, with its Waumbek Hotel. On the horizon are the peaks of the Presidential Range

New Hampshire Site of AFA Fall Meeting

Jefferson, in White Mountains, picked for joint session October 8, 9 and 10 with Society for the Protection of New Hampshire Forests

THE colorful White Mountains of New Hampshire have been chosen as the setting for The American Forestry Association's 76th anniversary meeting on October 8, 9 and 10. With the Honorable Sherman Adams, the Granite State's governor-forester, acting as chairman, the general committee has selected the Waumbek Hotel of Jefferson on the edge of the White Mountain National Forest, as headquarters for the 1951 annual meeting.

Convening in conjunction with AFA members will be the Society for the Protection of New Hampshire Forests, this year celebrating its 50th anniversary. While details of the program are still incomplete, plans call for a keynote and forum session on the opening morning, October 8, followed by a field tour in the afternoon and a banquet featuring AFA's yearly Conservation Awards in the evening. There will be an outstanding speaker.

The second day will be devoted to field trips in the White Mountain National Forest, over Brown Company pulp and paper operations and to Dartmouth College land grants. The New Hampshire Society will have charge of the third morning's program, and on the closing afternoon optional field trips will be offered.

Not since 1933 at Franconia has The American Forestry Association met in New Hampshire. Those then active in AFA activities recall with pleasure the scenic wonders of the Granite State and its wealth of forest and recreation facilities. No less enticing is the locale and planning for this fall's meeting, with its eye-filling panorama of the Presidential Range.

It's not too early to circle the dates —October 8, 9 and 10— or even write Manager Kenneth P. Kenyon, the Waumbek Hotel, Jefferson, New Hampshire, for reservations. Members will get a special rate of $12 a day, American plan (hotel and meals).

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with this New Skidding Unit!

Here's the most versatile skidding unit you've ever seen . . . an Oliver Industrial Wheel Tractor and the revolutionary new Heller Winch. The winch, a double drum type, is installed between the tractor tires and transmission case. It is virtually a built-in unit that does not affect tractor balance.

Drums are operated by the tractor engine and can be engaged or disengaged at will. By using the tractor engine, clutch and transmission to drive the drums, 12 forward speeds and 4 reverse speeds are obtained. Line speeds can be varied from 38 to 928 feet per minute with line pulls up to 36,000 pounds with a bare drum. Drums can be operated together or independently of each other. This versatility makes possible a wide variety of log skidding, tree or stump pulling work. The tractor can be easily moved from one location to another under its own power. No strains are transmitted to the tractor.

This new unit is equally efficient for ground or high lead skidding. In high lead work, the operator can cushion the haul-in line by simply controlling the brake pressure on the dead side of the differential.

If you're interested in cutting logging costs, it will pay you to investigate the Oliver Tractor-Heller Winch combination. For details, see your Oliver Industrial Distributor or write The OLIVER Corporation, 19300 Euclid Avenue, Cleveland 17, Ohio.

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A complete line of industrial wheel and crawler tractors

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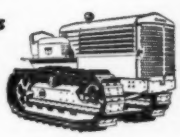

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Let's Go to Alaska

(*From* page 13)

inland river areas make up 342,000 square miles containing white spruce, birch and cottonwood. All over the southern tip of the Panhandle grows Western redcedar which is an excellent shingle material, and a wood extensively used in cabinet making.

While lumber is the thriving business of industrial Alaska, fur animals are the basis of the major portion of the income of thousands of Indians, Eskimos, Aleuts and white trappers scattered throughout the entire Territory. Many of these trappers employ other ways of supplementing their livelihood, but on the whole, trapping, hunting and fishing must be their mainstay for many years to come. Fur-trapping affords seasonal employment for about 8000 people and prior to the war, when the market was more stable, it brought in more than $2,000,000 annually. Old-timers and professional trappers like to measure good times by the numbers and prices of the furs they take.

Prospective settlers who would like to pit their trapping and hunting knowledge against the cunning of Alaskan wolves and coyotes will find District Seven— the Yukon Valley and points north — of particular interest. It is probably the finest fur-taking region in Alaska. It is a region, however, that borders the Arctic Circle and in winter the thermometers develop holes in their bulbs, so virile adventurers who wish to survive must have the know-how to cope with temperatures of minus 50 to minus 70 degrees. One need not be alarmed at these figures; ranchers in Montana and Wyoming frequently face such depressingly low frosts, and they and their stock usually survive.

As one might expect, fur farming has grown to lively proportions, and it finds much encouragement from the Alaska Game Commission. Leases are available, and in the past whole islands in the Aleutians have been leased. Here, as at Kanaga and Tanaga before the War, the breeding stock is permitted to run wild, feeding on aquatic foods washed up on the beaches. When pelting season arrives, the animals are taken by the usual trapping methods, or in enclosures surrounding a regular feeding ground.

For years ranchers have experimented with beaver, fox, marten, fitche, land otter, raccoon, mink, and lately with muskrat. The University of Alaska maintains a station at Petersburg to experiment with all types of fur raising. Ample locally-raised breeding stock is available for equipping almost any kind of fur ranch. Nowadays fur farmers are mostly interested in mink.

Coyotes and wolves bring a relatively high bounty in Uncle Sam's attic. Since the war, they have increased astonishingly, and today bringing about their abrupt demise has risen to a full time profession which offers an adequate income to an expert trapper. New settlers nearly always augment their scanty incomes during the first year or two of getting settled by laying out trap lines in the bush around their homesteads. Many commercial fishermen from the summer canneries turn to trapping when ice and snow close down water-borne pursuits.

During the last quarter century, mining—so much a part of Alaska in the popular mind—has given way in large part to commercial fishing as Alaska's principal industry. Thousands of seasonal workers crowd the Southeastern Alaskan towns, as well as those of Bristol Bay, during the fishing season. For the past five years, this thriving business has produced an average of $90,545,000 a year.

Many of these workers have to be brought from the States. Additional thousands of resident Alaskans depend on employment in catching, preparing, canning and shipping the millions of cases of fish taken from Alaska's coastal waters. Directly or indirectly, commercial fishing provides most of the permanent population with a goodly share of its yearly income.

Individuals, owning their own small $3000 trollers average from $3000 to $4000 each year. Fishermen in Bristol Bay have been known to clear $4000 in the 18-day season!

The principal commercial fishes are salmon, sablefish, halibut, herring, and to a less extent cod, rockfish and flounder. Clams, crabs and shrimp make a nice side-line income. Salmon, as the leading food fish distributed all over the world, contributes six and one half million cases a year.

The casual fisherman with a sports-

man's eye will find in Alaska just about the most magnificent fishing on all the earth. As elsewhere the world over, sportsmen experiment with every kind of bait and lure. Both sport and commercial fishermen employ trolling spoons or plugs behind a slow boat, and any fisherman's skill is taxed to the utmost to pull in and gaff a 30 to 50-pound king salmon crammed with fighting spirit.

Good fishing can be had for the asking by hopping an easily-arranged-for bush plane to reach the more inaccessible lakes and streams, and countless summer visitors stagger back to civilization loaded down with rainbow, cutthroat, grayling and steelhead from literally hundreds of creeks, rivers and lakes. Just take your pick, or better shut your eyes and jab a pin into any map of Alaska. You'll find find there by the 'illion.

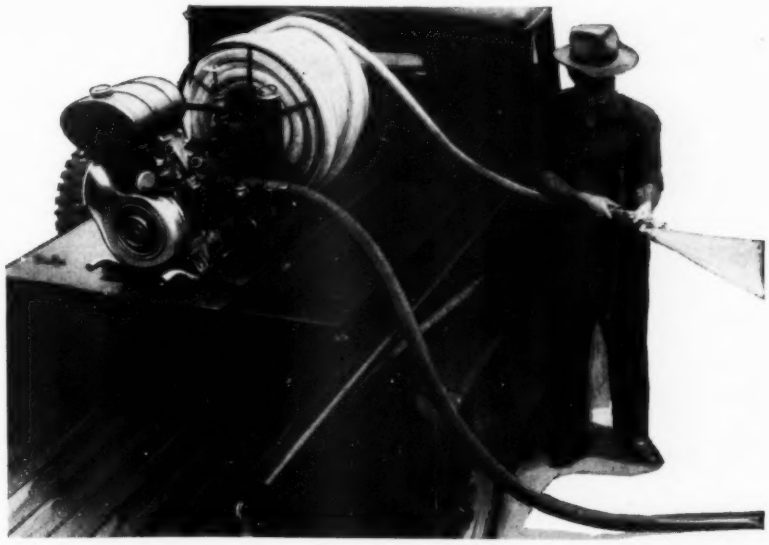
For 50 years gory tales of romance and tragedy about the Klondike, Nome, and Fairbanks goldrush days have been appearing in numerous magazines. Tales of dance hall girls doused with gold dust have captured the imagination of generations of readers, and although the more lurid narratives have mostly ceased, the flow of gold has not. Alaskan gold mines have yielded more than half a billion dollars during the past half century, and optimistic Alaskan Chambers of Commerce estimate that much more gold remains in Seward's Folly than has ever been taken out.

The pan and rocker have largely given way to the skilled mineralogist with his chemicals and assay pipes. Expensive hydraulic equipment today handles more dirt in a shift than the old time prospector could shovel in a season. Yet, strangely enough, the old hard-rock boys work alongside the most modern machinery, and both are indispensable. The demand for new explorations is great, and the lure of gold and the free, untrammeled life of the prospector have much to attract a man who enjoys the simple outdoor life.

It is well known that there are still large areas of land in Alaska which have never been adequately prospected. Most of it is isolated, like the upper reaches of the Kobuk River 200 miles northeast of Nome, and the virtually unmapped country along the small tributaries of the Koyukuk River northwest of Fairbanks. All of it can be reached by airplane, but other transportation is practically non-existent.

Modern day prospectors are not

(*Turn to page* 35)



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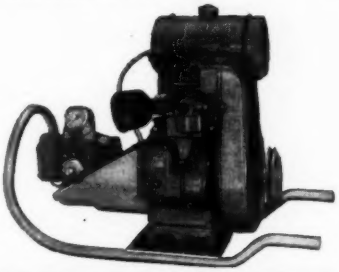

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Indian Forest and Range, by J. P. Kinney. Published by Forestry Enterprises, Washington 6, D. C. 357 pages, illus. Price $4.50.

New and entirely different is this history of the American Indian in which the author traces in detail the administration and use of the forest and range resources of the red man since 1880. Completely documented, it is a record of the successes and failures, and the growth toward applying sound conservation principles and economics on some 15 million acres of Indian lands.

Mr. Kinney writes with authority on his subject because it was he who instigated organization of a Forestry Division in the Indian Service in 1910 and went on to direct the activities of that governmental unit for 23 years. His probing analysis spares no one, but at the same time it gives full credit to individuals, groups, and agencies which helped shape the policies and procedures for conservation and wise use of forest and range resources.

Forests and Men, by William B. Greeley. Published by Doubleday & Company, Inc., Dept. AF6, Garden City, New York. 255 pages. Price $3.

The passive conservationist, idealist, crusader, professional and student foresters—all will find this book intensely interesting. It is the dramatic story of men and events in 50 years of conservation and forestry as told by one who has lived and participated in every moment of it.

It is a story of past progress and hope for the future, graphically illustrated by first person stories and evaluation of crises large and small which have marked the evolution of our conservation thinking. The author takes us through the entire gamut of forestry as he began to live it at the turn of the century as a young U. S. Forest Service ranger in the fire razed big-timber country of the West, on through the political phases which marked his days as U.S. chief forester, and up to the current era when he has become closely identified with industry's reforestation, management and timber use problems.

Colonel Greeley has done a splendid job in weaving the multitudinous facets of so complex and moving conservation story into highly interesting and eminently unbiased prose. True, there are contemporaries who will disagree with him, but there are few who will question his sincerity. The student, as well as those now engaged in forestry, will find the book invaluable as a source of history. Many will want to keep it handy for future reference.

This Is Our Land, by E. G. Cheyney and T. Schantz-Hansen. Published by The Webb Publishing Company, St. Paul, Minnesota. 345 pages, illus. Price $3.50.

Originally published in 1940, and revised in 1946, this illustrated text has been reprinted by popular demand of conservation-minded people who realize the necessity of conservation being incorporated in our educational system. In discussing the story of conservation in the United States, the authors, in a simple but dramatic manner, present a discussion on the use, misuse and waste of soil, water, forests, grass, wildlife, minerals, and human resources.

My Camera in the National Parks, by Ansel Adams. Published by Virginia Adams, Yosemite National Park, California and Houghton Mifflin Company, Boston, Mass. 97 pages. Price $10.

Among the millions of photographs and the extensive literature extant on the National Parks, Ansel Adams' new book is a unique interpretation of the supreme wilderness aspects of the land. In this highly selective volume are 30 of his celebrated creative photographs, ranging from the vast depths of the Grand Canyon to the rain-drenched shore grass of Glacier Bay. The volume also includes a short essay on the concept of the National Parks, technical notes on the photographs, and information on the various Parks and Monuments.

Let's Go to Alaska

(*From page* 33)

looking exclusively for gold any more. Copper, silver, platinum, tungsten, lead, tin and many non-metallics have already yielded another half billion dollars since Seward grabbed off his prize. So far, apparently, the surface of Alaska has barely been scratched.

Alaska is noted for its abundance and variety of wild life. If you aspire to shoot some of the world's largest carnivorous animals in one of the finest big-game areas in North America, go to Alaska. Among the most-sought-after game are moose, mountain sheep and goats, Sitka deer, caribou, bears, wolverines and all kinds of smaller fur-bearing animals. A $10 bird license gives you the right to bang away at ptarmigan, ducks, geese, and grouse, and there are millions of them. It's open season on nearly all game all over the Territory in September.

Some prize-winning trophies have been taken in recent years. On Kodiak Island, one grinning nimrod brought down a bear with a hide larger than his living room rug, measuring 11 feet long by 11 feet, eight inches wide. Alaskan brown bears — the largest carnivores on earth sometimes weighing 1500 pounds — produce hides better than 11 feet square. Nine-foot grizzly pelts are common. Mountain sheep produce record trophies with horn spreads of 28 inches, while moose antlers space as much as 73 inches from tip to tip.

No experienced Alaskan would want to face a brownie or grizzly with less than a .30-06 rifle with a 220 grain bullet, yet one brownie was killed with a .22, another with a shotgun loaded with No. 6 birdshot, and while it strains the credulity of most Alaskans, still another was reported killed by a rock thrown from the hand of a sourdough. Brother, he must have had some wing!

Naturally, guns are a vital consideration in Alaska. While the .30-30 carbine is a most popular all-around rifle, conclusive evidence indicates that the slugs, lacking the penetrating and shocking power of the heavier .30-06, frequently glance off the thick

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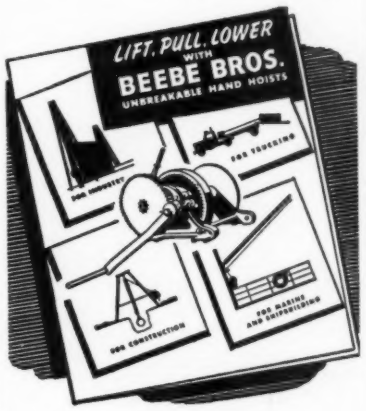

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"One wise old logger said that plenty of trees would be grown when they were an insurable fire risk and you paid only a fair tax on what you got for the crop."

"The steady expansion in wood uses and technologies is the strongest ally of forestry in the U.S."

These are but a small foretaste of the book whose every page has something authoritative and fascinating to say to everyone whose livelihood or interest is forestry or the industries. The author was Chief of the U. S. Forest Service for eight years. Since 1928 he has been Secretary of the West Coast Lumbermen's Association and he is now the Chairman of the Board of the American Forest Products Industries. One of the foremost authorities on the subject, he is respected and known both by government foresters and leaders of industrial forestry.

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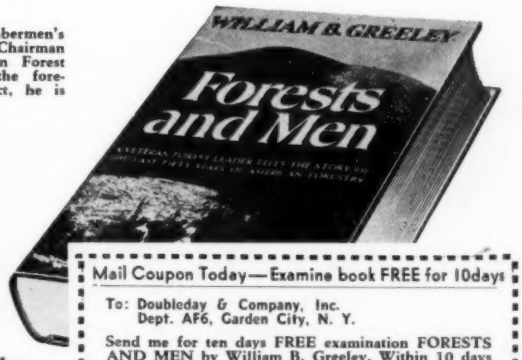

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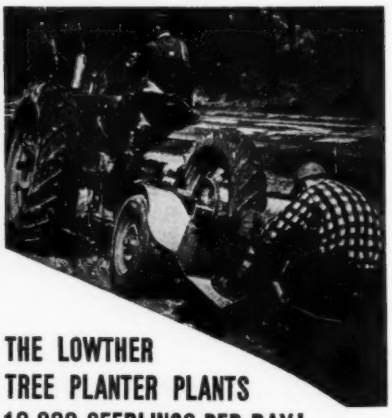

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skulls of bear and moose. The only other really popular and necessary rifle is the lowly .22 so much used on small game.

To round out the picture of Alaska, there are Indians and Eskimos who live not only in the big cities, but make up most of the population of many outlying settlements. They are friendly people, happy-go-lucky, willing to supply new settlers with meat and skin garments at reasonable prices.

In general, except for the fur and commercial fishing industries, and mining which has become the property of such great combines as Guggenheim, Alaska's industrial development is in its infancy. Anybody can start up a new business and figure a fair margin of profit. Water power is free for the harnessing, and in the vast interior lies all the coal and timber for fuel that private enterprise would want.

The basis of Uncle Sam's growing northern possession is rapidly becoming more agricultural. This is good news, because unless a permanent population comes to stay, to raise its own produce and develop the natural resources of a still wild, frontier region, the individual would be hamstrung by his dependence on transportation to and from the States. Fortunately, today in the postwar world, more and more people are turning their eyes northward to America's own private frontier country to start life anew with all the advantages on their side. Perhaps you, too, will find yourself heading north someday by rail, boat, airplane or the Alcan Highway. If you do, good luck to you.

Beaver Boom

(*From page* 16)

beaver, particularly by adult bedtime story writers who would have us believe that the animal is not only a paragon of all the virtues but is possessed of an intellect surpassed only by Einstein's. The beaver is good, but not that good. True, in some ways he is astoundingly smart but in others he is abysmally dumb.

There is no gainsaying the fact that he is an amazingly good dam builder. He has no set formula for the building of such structures, but seems to improvise as conditions demand. Some dams are slightly convex in shape, some concave, while others follow a zigzag pattern. The length may vary from just a few feet to over a thousand, and the height from four to seven feet. Interestingly enough, the beaver sometimes builds a sub-dam a short distance down stream from the main one so that the backed-up water will ease pressure on it. And a beaver dam improves with age. It is constructed chiefly of sticks, stones and mud. As time goes on, bushes, shrubs, and grasses grow out of the mud and their root systems weave the whole thing together into an unbelievably sturdy structure.

Although it is not generally known, the beaver is also quite handy as a canal builder. Canals often run several hundred yards in from the beaver pond and are used to float down trees that the animal fells with his teeth. It is in this felling of trees that the beaver shows a shocking lack of know-how. Felling a tree in any desired direction is just about the simplest engineering feat imaginable. Any city slicker can take a few minutes' lesson from a woodsman and do a pretty good job of it. But not the beaver. Although he has been gnawing down trees for no one knows how many million years, he is just as inept as when he started. He apparently has no idea whatsoever where any given tree will end up once it is gnawed down. Occasionally a beaver will even be trapped and killed by one. This unfortunate ignorance makes a lot of work for him because often a tree will lodge in other trees and not come to earth at all. On other occasions, one will fall directly away from the direction of the pond or the canal entailing a lot of beaver sweat to get it afloat. Thus the beaver is one of nature's paradoxes—an animal that is surprisingly smart in some phases of his life's work and pathetically unintelligent in at least this one.

A beaver doesn't build a dam just for the hell of it, but as the foundation for as interesting a way of life as is to be found in the wild animal kingdom.

The dam serves a variety of purposes. It creates a pond that may be anywhere from a couple of hundred yards long to a mile or more. In it, and from similar materials, the beaver builds his house, a conical affair that rises from the water by from

four to eight feet or even more. Entrance to the inside of the house, which is a large room bedded with grass or finely chewed wood, is by means of an underwater tunnel which renders the beaver immune from attack by enemies. In the winter the foot thick house freezes solid and is impregnable even to a bear who might cross to it on the ice.

The pond also serves as a storage basin for the winter's food. The animal's bread and butter is the bark and twigs of the aspens, alders, willows and other trees. In the summer he gathers as much of this material as he thinks advisable and anchors it to the pond's bottom with mud. In the winter when he is hungry he slides down his tunnel, swims under the ice to a hunk of wood encased in the kind of bark he thinks will hit the spot on that particular day and lugs it to his house where he gnaws away at leisure. And he can take plenty of time making his selection because he can stay under water from nine to 12 minutes.

The beaver is trapped by cutting a hole in his pond and inserting in it a freshly cut stick, usually of aspen, with a trap attached to it. Trapped, the beaver drowns.

A beaver can be a nuisance by flooding over valuable timber but usually he is a benefactor to other wildlife and to man. His ponds make admirable wallows for moose and deer. They form nesting places for various species of ducks. They are well suited for muskrats, a valuable fur bearer. Various foodstuffs, preferred by birds and animals, spring up around them. And the beaver pond is nature's storage basin as it impounds water greatly needed during the dry months of summer.

The beaver has few enemies. Some fall victim to the wolverine, the forest gangster, and once in a while one will be attacked by a lynx or bobcat. But that is about all.

Wisely enough, the beaver reserves his lovemaking for the long winter months when time hangs heavy on his hands, or paws, and there isn't much else to do. Snug in his warm house when the winter winds howl over the forests, he whiles away the time by whispering sweet nothings into the ear of his beloved. Come spring, she reciprocates by presenting him with from one to five babies.

Woodsmen, who admire the beaver as an industrious fellow worker, never tire of telling tall tales of his accomplishments.

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poked a hole in a beaver dam and hid to watch developments. In a moment three comparatively young beavers appeared and went energetically to work repairing the damage. Unfortunately, however, the hole grew larger and larger despite all they could do. Finally one of them left the group and started swimming frantically upstream. In a half hour he was back with a gray muzzled patriarch of the species, evidently the chief engineer for that neck of the woods. For a few moments the old fellow scratched himself absentmindedly as he studied the problem and then he went to work. In next to no time at all he had repaired the damage. Swimming wearily back upstream he thought, no doubt, that the younger generation never would amount to much.

Davy and the Mammoth Buff

(*From page* 17)

living with relations again gave me the horrors. I could abide the life I'd been having in Cotter's Camp except for this new milking deal.

While I was chawing beans and bear and cussing bronco cows, Uncle Ben Cotter had moseyed into the cookshack. I turned sullen on him. He took a seat on the bench across the table from me and went calmly into drawling talk about Davy Crockett, the Tennessee and Texas hunter and Congressman of the 1820s and '30s. I listened glum. . . .

Yesiree, Davy liked cows and he liked to milk (Uncle Ben repeated, and went yarning along). He learned it in his youthsome days when he made his famous trip to the Oregon wilderness by way of Snake River, the Seven Devils, Hell's Canyon and the Columbia Gorge. Through the gorge, Davy hit the big timber. He had never dreamed that mortal trees could grow so tall, so thick through, and so close together. Davy Crockett might have had the big trees named for him, but he was shy on horticulture. Five or seven years later David Douglas sailed up the Columbia and gave the big trees a full going-over. This David did know his horticulture, he sent back the proper reports, and so the mightiest tree of all the Northwest came to bear the name of "Douglasfir."

But that's botany, son, and you are a mite young for it. What I set out to tell was how Davy Crockett came to be a milker and a calf-handler among the Oregon breed of buffalo—"mammoth buffs" they are named in the historical Crockett Almanacs. They were as much bigger than the puny buffalo of the plains as the Oregon trees were bigger than Arkansas loblollies. Or as much bigger as the mud wolves of the Oregon lowlands and swamps were above the foxes of Missouri. Biggest of all to compare with others of its kind was the sawtooth sarpint of the Oregon prairie.

It was such prodigerous terrors that had turned Lewis and Clark back home. The same was holding the British back from the Columbia. It all gave Davy Crockett a mighty lot to think about as he watched the Goodgrit Expedition sail for home with the specimen of traveling tree it had come for, and handsome Sally Goodgrit, the wolf-killer gal, standing in the stern, crying for Davy to come along.

But he was bound to stay. Davy Crockett had made a vow to pacify the Oregon land and keep it free for Hail, Columbia. It was up to him to tame the mammoth buffs, extarminate the mud wolves and sawtooth sarpints, and make it safe for the U. S. Army to venture into Oregon and clear the way for settlement.

So he let Sally Goodgrit sail away with her pa and the other Yale men, and with the poor, wornout and bescraggled traveling tree, and then Davy Crockett shouldered Killdevil, his powerful rifle, and took his forlorn trail into the big timber.

Right soon his heart turned lightsome. For it was his fortune on this fine summer day to meet Old Boo, the grizzly bull of the herd of mam-

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moth buffs that ranged the Lower Columbia and the Willamette Valley. Davy came on Old Boo right at a time when five forgetful bears were coming at the buff from five ways to bring him down. They had forgotten about Old Boo while they were hibernating the previous winter and nobody had bothered to remind them since. Now it was too late. Old Boo took two of the bears on his horns and tossed them straight up. He brought down another pair with hindquarter kicks, and the fifth he laid low with one stroke of a front hoof. Old Boo pawed the five done-for bears into a pile and went sashaying and snorting around them. He let out a bawl with a heave of wind that hit Davy Crockett's coonskin cap, raised it and gave it a half-turn on his head before it let go.

Davy stood staring, with the tail of the coonskin down his nose. There Old Boo was, stomping off through the big trees, most roaraceous, butting this one, kicking another, cracking a young one over whenever he felt like it. He was a red buff, and where the sun would strike through on him his hair blazed like fire. Davy had been favored with no look into Old Boo's eye. Now he was pleased to admit it. For away yonder a huge hawk did swoop to look Boo in the face, and the glare he got left nothing but bits of singed hawk feathers and crisps of hawk bones flying through the air. Davy Crockett made no move to shower down on Old Boo with Killdevil. He knew bullets would bounce off the red bull of the mammoth buffs like goober peas off Old Airthquake, the boss alligator of the Mississippi.

Neither did Davy Crockett, strongest screamer of all Tennessee, unloose even one lone screech of war after the vanishing hump and hindquarters of Old Boo.

What Davy did was sink into solemncholy thought. He tramped on, came to the pile of slaughtered bears and took a seat on top of the heap to do his thinking.

It appeared to be almighty hopeless. Old Boo seemed surely to be too tough to kill by any means that Davy Crockett had at hand. That bull hide would shed cannonballs. Shoot him through the eye? That glare would melt a bullet, or a breath from Old Boo would make a shot backfire on the hunter. Must be a weak spot somewhere, though. Davy was thinking hard on that when it suddenly seemed that he must be dreaming, for he felt for all the world as though he was a boy again and that Aunt Screechy was washing his neck as she used to do every other Sunday back home in Tennessee.

But it was no dream whatever. Davy looked up, saw the big trees of Oregon, then turned his head to gaze into the biggest and kindest eyes alive. They belonged to a buffalo cow who had lost her calf. Overflowing with milk and maternal nature, the buff had turned to youthsome Davy and wanted him as her own. She gave his neck a last lick that threatened to drown him, then opened her jaws and let out a tender moo. Davy Crockett looked down a throat which appeared able to swallow him in a couple of chokes. It made him think of something. He thought so hard he forgot to be scared.

Davy figured to let the cow buff mother him as much as he'd be able to stand. She let him milk her with no more trouble than you have with your bronco cows. And Davy liked it. He liked to milk right from the first, and forever after he was proud, proud as punch, to tell how he had learned to milk with a big red cow among the wild buffs of the Oregon country. It was scarcely more trouble for Davy Crockett to break the buff cow to ride. He rode her neck ahead of the hump, with Killdevil slung from his shoulder and Big Butcher and a whetstone in his hands. As he rode the cow up through the big timber Davy sharpened his knife to a needle point and razor's edge. All the while he kept thinking and thinking. It hurt some. Davy Crockett was a Congressman born, and think-

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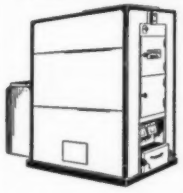

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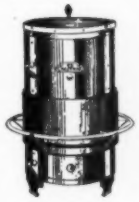

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ing was no way native to his nature. Many times that thick Congress skull of his had saved his life.

It was in a twilight and the herd of mammoth buffs was bedding down when the stray cow came in with Davy Crockett on her back. He could see well enough to tell that the cow was a poor runt of the herd and in no good favor. Too soon for comfort Old Boo came pawing and snorting her way. Davy's heart started sinking in his breast, and for the first time in all his days he felt himself quaking in his buckskins. It was something close to a tremble in his hands. The cow under him shook and cowered and pitiable moos whimpered out of her.

But it was do or die for Davy. He had thought out what he had to do and now he was where he had to try it. So he stood up boldly on the cow's hump as Old Boo pawed and snorted close. He took Killdevil off his shoulder, set the stock in the cow's hump and gripped the barrel with both hands, at the same time gripping the handle of Big Butcher.

The bull of the mammoth buff herd loomed powerful close. Davy Crockett took one mite of a peek through the twilight murk and got a glimpse of two eyes that were like balls of heat lightning to see. Then he kept his gaze down to the bull's muzzle. Closer and closer it came, while the runt cow stood and trembled under poor young Davy Crockett.

He stood scared but steadfast. He hoped, he hoped, he hoped. He reckoned it was prayer. And the fighting chance was given him. Old Boo halted nigh. He took a long, strong smell. And he hoisted his head and opened his jaws wide for to blast the strange critter from the cow's back with just one beller.

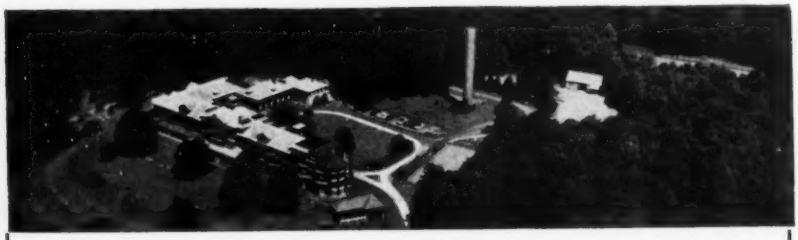
But before that beller could rise, Davy Crockett had vaulted through the air, letting Killdevil fall from his hands, and he dived headlong down the great cave that was the throat of the mammoth buff bull. All the rest that Davy could remember was what he called a tornadorious conglomeration of calamaties.

He said he was down in the blackness of the buff's innards for a likely seven minutes that seemed like seven years. Now he felt he was swimming under water, now it appeared he was flying through the air, then he guessed he lit on a gizzard, and at every turn he put Big Butcher to work. Inside himself Old Boo was not so tough. Amid the tumult Davy could hear him beller and bawl with agonies and feel him thresh, rear and roll. Through hide and ribs Davy could likewise hear the timber fall as Old Boo knocked trees over. Every minute the rampage grew mightier. Davy Crockett began to smother for air. He was going under.

But Davy was vowed to stab and slash away to the last gasp inside the mammoth buff bull. His senses swum, his head roared, each gasp was closer to the last one, but he stabbed away in the blackness—and then one wild slash was followed by a gush of air! Davy had whacked into a lung!

He breathed hard. His head came clear. He found his thinking cap and put it on again. From that rush of air he felt his way to the heart of the buff bull and its great vein—a whack—a stab—a slash—and Davy Crockett went tossing and whirling in a flood of blood.

It raised him up and bore him forth. Drowning in the tide he had let loose, Davy Crockett hardly knew it when he pitched and rolled from slavering jaws, blown by the gasps of the staggering and dying buff bull. Davy fell. He lit in the branches of a fir tree that had been knocked over by Old Boo. The next thing he knew it was sunup, and there was the faithful buff cow, licking him clean, seeming so proud of him as her adopted calf... while yonder in death loomed



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Old Boo, the mammoth bull. . . .

Uncle Ben's voice sort of drawled into nothing. In the quiet I felt at peace with him. It was not on account of the fool story itself. Somehow his bothering to keep me company and tell me the tale simply made me feel warm toward him. I went to bed in a good humor. Next morning I was up before daylight, milking, and musing over the James K. Polk account of the Yaller Blossom of the Forest and the Oregon buffalo. Of course James K. Polk had never actually told it. But I was long finding this out.

Teamplay Can Lick Pollution

(*From page* 9)

thing, a nuisance bloom of algae may occur with startling suddenness. On May 20, 1949, Lake Mendota was the clearest it has ever been in the history of scientific measurement. On May 30, only a "handful" of blue-green algae could be detected. And yet by June 3 a full-scale bloom was under way.

For another thing, one clue to the reason why blue-greens get out of control may be the fact that they seem to have few natural enemies. Other algae are "grazed" upon by microscopic animals known as zooplankton. But these zooplankton apparently don't feed on the blue-greens.

Soil management. When U. of W. soils men were told that a creek flowing through farmlands into Lake Mendota near Madison sometimes has a nitrogen concentration of 27 parts per million (the normal concentration is about two parts per million), they were mighty disturbed. They figured that farmers in the watershed were losing nitrogen in run-off water at a rate equal to half as much as they apply on their fields. And they built some test plots as a means of finding a solution to the problem.

Now Professor M. L. Jackson and his associates believe they have at least part of the answer:

On steep land in a six-year rotation having one year of corn, one year of grain, and four years of hay, the loss of soil may be ten times as great as when there is only one year of grain and five years of hay in the rotation. Losses of organic matter, nitrogen, and other fertility factors also are greater where both corn and grain are included in the rotation.

So these researchers are saying that what has become known as the system of "grassland" farming is a good way of cutting down erosion. By keeping some land in grass all of the time and all land in grass some of the time, a farmer can keep his soil—and his profits—at home, and his fertilizer out of near-by lakes and streams.

Weed harvester. Wisconsin scientists believe that if shallow areas of lakes can be effectively rid of surplus weed growths, part of the problem of smelly lakes will be licked. That's the "why" of Professor Don Livermore's weed-cutter and harvester.

His custom-made machine consists of an eight-foot-wide reciprocating cutter bar, like a haymower, which can be operated at depths up to four and a half feet. To this cutter is attached an inclined conveyor, like a hayloader, made up of a never-ending belt of steel matting. This rig is mounted on the front of a large

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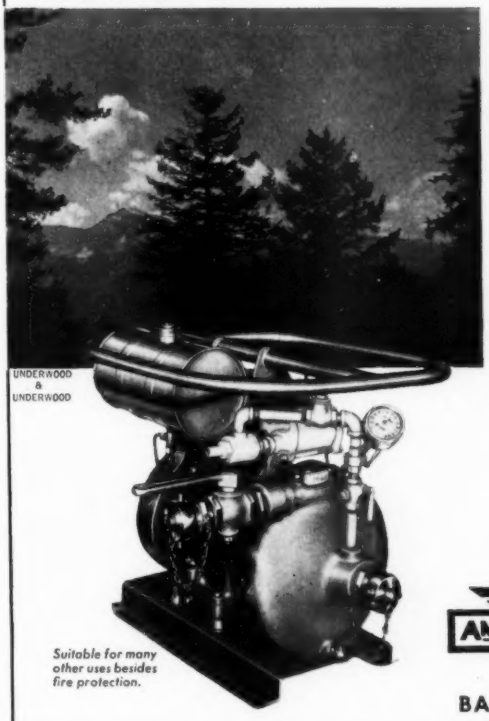

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barge, which is powered by an automotive-type motor and propelled by paddlewheels, like an old Mississippi riverboat. Controls are in the rear. Extra oil-drum pontons help keep the craft afloat.

This floating "lawnmower" can harvest about four tons of drained weeds an hour. Special shock-absorbers keep the cutter from being damaged by bottom obstacles. As the machine moves through a submerged weedbed, at a speed of about a mile and a half an hour, the cutter slices off the weeds cleanly. Then they are automatically carried up the conveyor belt and dumped amidships, draining as they go. From there they have to be forked onto shore, but Livermore says a mechanical means of unloading could easily be devised.

Waste conversion. Working at a tangent from the "smelly lake" problem, Wisconsin biochemists have developed a process for converting paper mill wastes into useful industrial products. The discovery promises to be a big step in the prolonged fight to eliminate stream pollution. Conservationists estimate that American paper mills dump six billion gallons of sulfite waste liquor into rivers and lakes each year. This waste material destroys fish life and also becomes a human health menace.

The Wisconsin anti-pollution process converts sulfite waste largely into lactic acid, a chemical used in making lacquer, tanning leather, processing certain foods, and for other industrial purposes. About 285 pounds of lactic acid and 75 pounds of acetic acid can be made from 2000 gallons of sulfite waste, the amount obtained from a ton of spruce wood. Conversion formulas have been perfected in the Madison laboratories, and now pilot-plant experiments are under way in northern Wisconsin.

And that's the story of how team play on a university campus is moving ahead toward a firmer understanding of woods-and-waters management.

Dr. Deen Dies

Friends of Dr. J. Lee Deen, dean of the School of Forestry and Range Management at Colorado A & M College, were saddened to learn of his death April 24 following an operation. Readers of *American Forests* will remember Dean Deen (54) as author of "Forestry Education in Europe" in the January, 1951 issue. His contributions to both forestry and education were legion.

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THE AMERICAN FORESTRY ASSOCIATION
919 Seventeenth Street, N. W.
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Family Camping

(*From page 27*)

ter than a slow smoky fire. There is much to be said about the romance of cooking over a wood fire, but there is also quite a bit to be added about the convenience of a gasoline stove. Since our purpose in camping was to see the country, and not just to camp for camping's sake, we chose many devices that might ordinarily not be used.

Long before our trip began we had written to the Parks Departments of the states we knew we would pass through and began to plan our route. The whole family entered wholeheartedly into the planning. We tried to keep daily mileage down to 250 miles, since this proved about the limit which the three children could stand without strain.

We planned our menus well in advance and purchased staples for the entire trip. Fresh meats, and milk and bread we bought along the way. With the use of hot meals only at supper and breakfast, lunch was of the sandwich or easily prepared type. We used many of the time saving foods now on the market — such as instant potatoes, minute rice, dehydrated onion flakes and some of the excellent dehydrated soups. This, with some canned boned chicken, canned shrimp and corned beef, furnished us a reserve supply of food, in case we failed to locate fresh meat for supper.

Most of the parks we stayed in have a small fee for the use of a tent site, but this is negligible. Most of them have running water, sewer, shower, and toilet facilities very conveniently located near the tenting area. Some of the parks have cabins for use at reasonable rates. We rented one one night only when it turned cold and rainy. The cabin, large enough for the five of us, cost only two dollars, which will give you an idea of the economy.

Some of the road maps issued by oil companies show where camp sites are located. One of the major companies even has a map which lists the complete facilities available at each park, such as cabins, fishing, and swimming.

Memories of our summer will be rich. The children often recall bits of it in conversation. There was Natural Bridge and the Fairy Stone mine in Virginia, sunrise on the Blue Ridge Parkway, the many sights of Washington, and the "highscrapers," as

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Tommy called them, of New York City, the old and incredibly lovely countryside of Connecticut, the stone fences that are a monument to the aching backs of many farmboys, the rugged terrain of upper New York, with its many cascading waterfalls and the Grand Canyon of the East, and then mighty Niagara with its rainbow riding the mist, and many many more.

There is a definite increase in family camping. A. N. Moye, director of the Parks Department of Georgia, said, "More families have discovered the use of these naturally beautiful sites; not only has the economy attracted them, but many have discovered that there is a great pleasure when the family camps together and works as a team. It is one of the fine welding influences many of our families can and should enjoy."

Advice given by the directors of all state and national parks to campers is that they arrange their itinerary to arrive by three or four o'clock in the afternoon. Campsites are never reserved and are let on a first come first served basis.

Already our maps are out planning for our next trip. Dale wants to get in more fishing, Ann wants to see the Rockies and Tommy just plain wants to go. We're still in the mood—maybe we'll see you somewhere along the trail.

Gambling With Our Grayling

(*From page* 23)

Prof. J. W. Milner discovered and named it *Thymallus montanus*. It is distinguished from trout and salmon by its large iridescent dorsal fin, grayish hue, large scales and deep blue-black spots on the abdomen.

The grayling possesses three qualities endearing it to fishermen: a voracious appetite, a habit of surface feeding, and a fondness for small insects. Hence its superb eligibility for fly fishing. The flesh is firmer, more flaky and sweeter than that of trout and can be eaten for more consecutive meals than trout.

The two major problems of how, successfully, to rear grayling to legal size in a hatchery and where to plant them for their greatest protection have been solved.

Three men are responsible for licking these difficulties: Fred Beal, foreman of the state's largest hatchery at Anaconda; Harry W. Baker, Jr., superintendent of the federal hatchery at Ennis, and Dr. C. J. D. Brown of the Montana state college faculty at Bozeman, grayling authority.

At the state hatchery Fred Beal uses a dual method in grayling management: that of rearing and planting grayling fry (about three-eighths of an inch long and three to four weeks old), and of holding a batch one year to near legal size.

After stripping (a finger-freezing, slippery job) and fertilizing, the fine bright orange eggs are placed in jars and constantly agitated by fresh water flowing through the jars for about three weeks. If they are not in constant motion, the eggs, which are sticky, readily fungus on the exterior which spreads out in string formation, smothering eggs it contacts.

After starting to hatch, the eggs are removed to fine wire baskets in hatchery troughs fed by fresh water. The hatched fry have the ridiculous appearance of two black specks for eyes propelled by a transparent body and the mere suggestion of a tail. They carry on a vigorous early existence in the trough bottom. In one to four days these little-bits are planted in the backwater sloughs of the Wise and upper Big Hole rivers.

The primary difficulty with newly hatched grayling is their voracious appetites and too-small mouths. They crave food, lots of it and often. Man has found it difficult to obtain food particles small enough for them to handle, let alone digest. Beal puts his small fry in a large outdoor cement tank in which he has promoted an artificial culture of daphnia and cyclops. In a month they have grown to one inch. At this stage they are provided eight to ten times daily with a supplemental feeding of ground meat formula.

By the time the original batch of some 80,000 fry spend four weeks in the outdoor tank and are moved to a dirt bottom, weed-packed artificial pond and fed artificially three to four times daily for a year, about 10,000 at the most survive to legal size for planting. Grayling fingerlings are seldom planted because their shiny silver sides make them helpless prey to hungry trout.

As mentioned before, Georgetown is the principal source of grayling eggs in this country. However, con-

ditions peculiar to this man-made, privately controlled lake make the survival of the present brood stock somewhat precarious. The water level fluctuates as it is pumped out for ultimate use in the copper smelter at Anaconda. When water is pumped too low during a long cold winter, the mortality in fish is tremendous.

To survive in adequate numbers the grayling must be in streams and lakes free of all species of trout. Unless these lakes have rapid water inlet or outlet to provide natural reproduction and cannot be invaded by trout, they can serve only as reserve stock ponds, constituting continued if reasonable expense because they must be stocked periodically. Such a lake is Grayling Lake atop the Gravelly range, western ridge boundary of the Madison valley.

Some 25,000 grayling planted in this three-acre body of still water have thrived, and provide excellent fishing to those who make the five-mile, rugged drive in a power wagon and hike in the last half mile. Yet this is really no means of advancing or improving the existence of the species. A good winter kill could clean out this lake in one season.

Montana has not yet solved the problem of producing a high enough percentage of adult grayling per amount of eggs hatched. In face of recognizing grayling cannot compete with trout, the state continues planting in trout-filled waters.

The results of Fred Beal's efforts have become discernible to the average fisherman who wades the Madison, Beaverhead, Jefferson and Big Hole rivers and especially Governor Creek in the Big Hole Basin. Some limit catches have been reported. Beal is winning his fight the hard, uphill way. It is hoped public interest in the fate of this gray fighter will furnish that much-needed push to put the grayling over the hump toward a really broad margin of safety for survival.

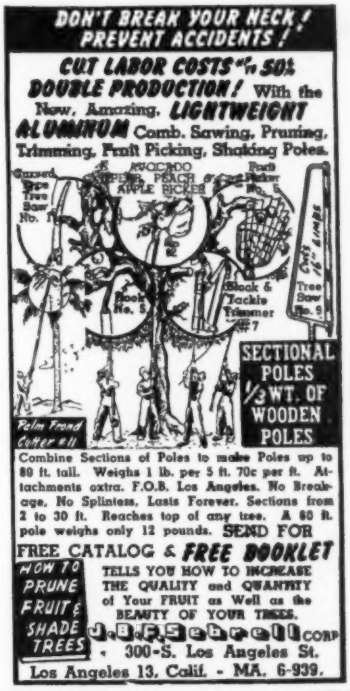
Brightest spot in the grayling picture is the little-known but highly successful work at the Ennis hatchery. For Harry Baker and Bob McElrath, the phrase "work in raising" has grim meaning. From the time the fry are hatched, these men spend long hours tending their destructible infants. They are fed every hour, troughs cleaned every half-hour following. Carelessness or tardiness can destroy a batch in a matter of minutes.

Horse hearts ground 40 times through a 5/64 plate and introduced into the troughs through fine sieves have provided the Ennis hatchery with the record of raising to adult stage 85 percent of eggs hatched. In addition to the fine-ground meat and abundant supply of clean, cold water, Baker feels the secret of his success is the constant attention given the fry in their first two months of existence. The entire 1950 spawn from Grebe is being held for brood stock development.

The criticism leveled at the federal project is it is too small to do more than stock a reserve lake or two. It must be more than a stop-gap for the depredations at Grebe.

The emergency is now. . . .

More emphasis must be placed now on the practical phases of the grayling program for the next few years so this game fish can shed the harness of whimsy and unconcern and come into its own as the first and fightingest dry-fly delight in the cold mountain streams of the west.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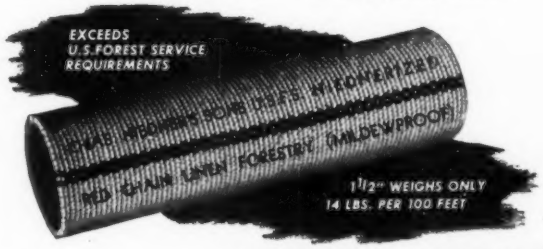

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THIS MONTH WITH THE AFA

NEW BOARD MEMBERS— Election to our Board of Directors of two nationally distinguished forestry figures—one the governor of a well timbered New England state and the other a newly-appointed dean of an outstanding Midwest school of natural resources—is the headline news of the month. The many accomplishments of these two, Sherman Adams, forester-governor of New Hampshire, and Stanley G. Fontanna, who will assume duties as dean of the University of Michigan School of Natural Resources July 1, are well known to all of us.

Active in lumber and logging industries of New England for more than 20 years before entering the political field, Governor Adams long has been a member of the professional Society of American Foresters. He played an important role in helping frame and pass New Hampshire's timber tax law, regarded in many circles as a model for other states to follow. He is now busy helping plan our annual meeting to be held October 8, 9 and 10 in Jefferson, New Hampshire.

Fontanna is currently winding up duties as deputy director of the Michigan Department of Conservation prior to taking over his new post at the university. He has been with the Michigan Conservation department since 1929, and has won nation-wide acclaim for his work, having served as president of the Association of State Foresters in 1949. At Michigan he will succeed Samuel T. Dana, valued long-time AFA Board member, who is retiring as head of the school after a long and eminent career, but will remain as a professor until July, 1952.

Gov. Sherman Adams, Board member

Stanley G. Fontanna, Board member

Three new honorary vice presidents were also elected to our roster of officers this month. They are: W. E. Merrem, vice president and general manager of Southwestern Settlement and Development Corporation, Houston, Texas; Henry T. McKnight, television executive and gentleman farmer of Vienna, Virginia near Metropolitan Washington, D. C.; and Erle Cocke, president of the Fulton National Bank, Atlanta, Georgia.

DR. SCHENCK ARRIVES— We were all happy to welcome Dr. C. A. Schenck, one of the truly grand old men of forestry, back to the United States on the first visit to his adopted country since before World

War II. The revered pioneer, founder of the first U. S. school of forestry at Biltmore, North Carolina, in 1898, arrived from his native Germany May 15 to be guest of honor during a "Cavalcade of Forestry," a highlight of which will be the dedication July 4 of the "C. A. Schenck Grove" in the Prairie Creek State Park of California.

Dr. Schenck spent the first two weeks of his stay in the New York and Delaware areas, arriving in Washington, D. C. the latter part of the month. We were honored to be his hosts for two days before his departure for South Carolina, North Carolina and West Virginia. He plans to return to the New York-Vermont area about the middle of June and will leave for the West Coast June 24, accompanied by your executive director.

NORWEGIAN FORESTERS—We also had three other visitors from across the Atlantic during the month—a trio of young graduate foresters from Norway. We must admit their mastery of the English language more than slightly excelled our fluency in Norwegian, but they seemed to enjoy themselves on a tour of AFA headquarters.

Two of them, Sverre Tore Hoel, of Lunderseter, and Tore Gaute Aas, of Eidsvold, are now beginning a year's study of U. S. timber production methods at Weyerhaeuser headquarters in Tacoma, Washington. Harald Wilhelm Aarsted, of Steinkjer, is pursuing similar studies at the Southland Paper Mills in Lufkin, Texas.

We cooperated with these two industrial organizations and the Norwegian Embassy in arranging for the one-year work visits.

TRAIL RIDERS ACCLAIMED—Our Trail Riders of the Wilderness program is moving more and more into the national spotlight. We read with pride in the May 18 issue of *The Christian Science Monitor*, a leading daily newspaper, an article by Shirley Allen, veteran of 13 expeditions, on the Cascade Crest, Washington, trip. The May issue of *American* magazine carried an account of the Sawtooth trip in Idaho by Mary M. Martin, while the May issue of *Buick* magazine also offered a general Trail Rider article.

Ford Times featured a Trail Rider article in April by Mary Richards Zimmer, associate editor, while *Sunset* magazine already has scheduled the first of a series on Trail Rides.

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6-51

Editorial

EDUCATION FOR FREEDOM FIRST

By KENNETH E. OBERHOLTZER

An appropriate education for freedom must certainly deal realistically with the conservation of natural resources. You know the importance of natural resources to business, and you have been deeply concerned with the distribution of these resources in our economy.

One of the fundamental causes of today's world-wide tension among people is the lack of balance between readily available resources and population requirements. Within the past 300 years the earth's population has increased from some 400 million to approximately two and a quarter billion people. It has been estimated that two to three acres per person are needed for the production of necessary food and raiment. The United States has this and more, but many nations of the world do not.

Few nations, if any, have ever been so richly supplied as has our own with so many of the natural resources required for a modern civilization. In the midst of such abundance many people have failed to see the need for careful and considerate use of nature's richest treasures. Moreover, we have placed few restraints on those who use natural resources even when there was clear evidence of waste and destruction. Recent events are changing the picture. Lumber once plentiful is becoming scarce and costly. Supplies of metallic and fuel minerals are dwindling, particularly under the impact of wartime demands. Population has increased to the point where we must think about how much food we can produce from all the cultivable soil.

The public is becoming vaguely aware that our resources are limited, but that is about all. Before conservation will be widely practiced, better public understanding and a wholly different attitude must be developed. Specific facts about the limited quantities of essential resources still available must be widely circulated. Attention must be directed to instances of wasteful use. Our people must become aware of the fateful choice which even now they are making—the conservation road to national well being or the prodigal-use road to national disaster.

Part of the task of creating the necessary awareness is a problem of adult education. Conservation agencies, both official and voluntary, need to continue their efforts and indeed to expand and intensify them. They must try to persuade those who now control our basic natural resources to use them according to the principles of good stewardship.

Children now in school need also to know how to use our nation's resources wisely. They need to recognize wasteful practices and to develop such attitudes of civic and social responsibility as will make them conservation-minded adult citizens.

A major emphasis in a sound program of conservation education falls on the wise use of resources rather than upon hoarding them in a miserly way for some period of future use. Many of our resources can actually be increased and improved concurrently with their proper use. Examples are soil, water, forests, wildlife, and scenic resources. However, minerals and other resources that cannot be renewed as they are being used must be developed with the full knowledge of that fact and used only as they are really needed. It is my belief that one of the essential parts of this appropriate education for freedom must include the element of conservation of natural resources.

LICENSING FORESTERS

Signs that professional forestry in this nation is growing into long pants was emphasized recently when the state of Georgia adopted a law to license all persons engaging in professional forestry.

The new law, first of its kind to be adopted in this country, provides for the licensing of: "Any person using in connection with his name or otherwise assuming, using or advertising any title or description tending to convey the impression that he is a registered forester."

General requirements of registration are graduation from a four-year course in forestry in an approved school or college, and two years of satisfactory forestry experience, or the passing of a written examination plus a record of six years or more of active practice in forestry. A commendable feature is the new law's administration by a five-man board of foresters, appointed by the governor, to serve staggered terms.

To some, the idea of licensing and registering foresters may smack of control on enterprise. Many may feel that a suitable forestry degree, backed by experience and membership in the Society of American Foresters, with its carefully conceived qualifications for members, is sufficient. But the new law in no way poses a threat to foresters in this category —in fact it cloaks their work in new dignity.

Further, Georgia's law appears to protect both professional foresters and the public in making it possible to limit the activities of "quacks" and nefarious individuals who would capitalize on a growing profession by posing as forestry specialists.

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Down-time can mean lack of fire protection for America's vital timber resources. For a logging road is more than a route from stump to mill; it's protection against forest fire too. We must have a steady flow of lumber for defense workers' homes, military barracks, new plant construction.

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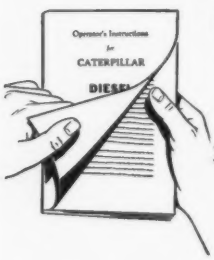

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